

EXHIBIT 9
**[UNREDACTED VERSION OF
DOCUMENT SOUGHT TO BE SEALED]**

Grenada ORT MTBF Trigger (SSO # KOR-0187)

Thanit Suksawang
Feb 7 , 2012



Background :

W31 ORT report MTBF at 107K vs 250K Disty / OEM requirement. Major failures are Degraded head (9 drives) , NMD (5 drives) and Skip write (5 drives). This impacts to Disty / OEM Native capacities , not 2TB BtC.

Observations :

- Apero media can meet 250K MTBF. However , Grenada Apero is planned for 10% supply only.
- Head degradations (9 drives) :
 - 5/9 can be captured with new ET combo spec and ISI spec.
 - 1/9 showed symptom of head failure on the 1st run. This require head and media replacement for EC10504.
 - 1/9 can be captured by drive parameter MAX_JUMP > 140.
- NMD (5 drives) :
 - 1/5 was with TGA reclaim. Reclaim TGA showed high failure rate at 3.9% vs Prime at 0.4-0.6%.

Impacts (total 2M drives).

- FGI : 398K (35K Korat , 94K Wuxi and 269K SuZhou).
- WIP (as of Feb 6) : 1569K (131K Korat , 335K Wuxi and 1103K SuZhou).

Supply :

- Under review.

Actions :

- Issue stop ship to contain Disty / OEM Native drives all capacities at WIP and FGI / Feb 4 [Done]
- Review for paper sort criteria for drive WIP and upstream WIP
 - Paper sort criteria as of Feb 8 is accepted to release Disty and OEM drives on hold / Feb 8 [Done].
 - Total reject rate from drive and ET / ISI spec based on 1-2 sample sizes per capacity is 6% / 15% / 27% for 1TB / 2TB / 3TB (3% / 6% / 18% for drive criteria and 3% / 6% / 9% for HGA and ISI spec). Details in the backup / Feb 8 [Done].
 - Working for SBS demand to absorb Disty / OEM paper sort failures / On going
- Head degradation upstream spec tightening / Feb 9
 - Cut in a new ET combo spec / Feb 6 [Done].
 - ET yield impacted by 1.6%. Review tester impacts and on hold as a new sort and discuss usage strategy / On going.
 - Slider to cut in a new spec by Feb 9. Under PCA sign off and PG comes back from holidays.
- NMD reduction plans.
 - Review to cut in PCO17.3A (new MQM) / Feb 9.
 - JIT 3 F3 code / Feb 10 (under SIE / Reli testing).
 - New servo code / Feb 14 (under SIE / Reli testing). Require the code for factory check out by Feb 10.
 - Stop using TGA reclaim / W23 [Done]
 - Determine qualification plans for TGA reclaim both MPT and NHK / W32.
- Change ADG rules for EC10504 from B2 to B3 / Feb 6 [Done]
- Need more FA on the remaining failures / On going.
- Review ORT AFR vs Field return and pareto / On going.
- Disposition changed for 1D Alphana MBA to use for SBS only / Feb 8 [Done]
 - Working to use -303 , current 1D Alphana Disty , for SBS. No re-config required / On going

BACK UP

Frank M / Brent V / Krishnan S / Pat D

Actions from 2/6/12 Call

1. FGI degraded head screen implementation Update – Factory
2. Updated fix effectiveness with changes on Slide 4 – Reliability
3. Updated warranty reserve to reflect 154k MTBF – Reliability
4. Lenovo OEM shipment support (percent Prime + PCO 17.3A) – Factory
5. Confirmation of Alphana 1D use on SBS only – Reliability
6. Impact of Alphana 1D FGI to SBS only - Factory
7. Plan to close to SAD launch performance levels – Core Team
8. 8D on Grenada ORT SSO – Core Team
9. Long-term degraded head specification implementation – Factory
10. Inventory assessment of 20A material – Factory
11. Pharaoh ORT/Field performance vs. Grenada ORT/Field performance – Reliability

Release SSO – Korat ODT/Factory/Reliability

SSO Clearing Actions

1. FGI – apply slide 4 head screen + FE table actions on Slide 9.
2. WIP – apply slide 4 head screen + FE table actions on Slide 9.
3. New build – HGA specification (complete), Slider specification (2/9/12), PCO 17.4

Updated Summary of Changes: GOTF Changes for PCO17.4 – Feb 6

Case 3:06-cv-00283-JCL Document 151-9 Filed 02/05/16 Page 7 of 34

| SN | PFL# | Failing Head | Symptom | ttf (hrs) | HD_SN | Proposed Screening Location | Proposed Screen(s) | Yield Impact at Location | Cut-In Date (Tentative) |
|----------|----------|--------------|------------------|-----------|------------|-----------------------------|---|-------------------------------------|--|
| S1D0HH3Y | PFL-3305 | 1 | Head Instability | 53.7 | AL50BIF0V1 | ET | WIJITA(15 max)+SGRNH_F3(1700 max) | 0.08% | Expect STTH cut-in on Feb 7 |
| S1F04WRR | PFL-3299 | 5 | Head Instability | 62.6 | AL50MFHJL0 | | | | |
| W1D0C9W4 | PFL-3355 | 1 | Head Instability | 295.3 | AL509CQBI1 | | | | |
| W1D09BNP | PFL-2954 | 1 | Degraded Head | 297.2 | AL507PHKJ1 | ET Drive CERT | TP_NLUMP(20 max) RAW_ERROR_RATE<2.1 | 0.07% ~ 1% | Expect STTH cut-in on Feb 7 Paper Sort + PCO17.4 |
| W1D0CA1T | PFL-3388 | 1 | Degraded Head | 162.3 | AL50EF73X1 | ISI Drive CERT | SMAN_AMP_MAX > 1700 and SMANMAX_MAX_MAX > 2100 RAW_ERROR_RATE<2.1 | 0.39% ~ 1% | Expect PNG cut-in by Feb 9 Paper Sort + PCO17.4 |
| W1E04V4X | PFL-3125 | 1 | Degraded Head | 151.5 | AL50PNYTH1 | ET Drive CERT | TP_PLUMP(-2min) + CTQ_NORM_NSE(0.13max) RAW_ERROR_RATE<2.1 | 0.38% ~ 1% | Expect STTH cut-in on Feb 7 Paper Sort + PCO17.4 |
| Z1F0C5DK | PFL-3162 | 5 | Degraded Head | 411.8 | AL506GQ9J1 | ET Drive ADG | TP_PLUMP(-2min) + TCO_SLN (2.2 max) Possibly prevent reCERT for EC10504 along with other potential ECs | 0.23% None | Expect STTH cut-in on Feb 7 Drive PE Team working Issue |
| Z1F0CM95 | PFL-3094 | 2 | Degraded Head | 98.7 | AL50GA1IT1 | Drive CERT | MAX_JUMP>140 in P135_AGC_BASELINE_JUMP for ACTIVE_HEATER=W | ~ 1% | Paper Sort + PCO17.4 |
| Z1F0ELHT | PFL-3232 | 1 | Degraded BER | 56.0 | AL50I2ASZ1 | Drive CERT | DELTA_BURNISH_CHECK>=5 in P_AFH_DH_BURNISH_CHECK for ACTIVE_HEATER=R and STATE_NAME=AFH3 and TEST_TYPE=BURNISH | ~ 0.19% head-level drive fallout | Paper Sort + PCO17.4 |

- Fixed an error in the HGA ET coverage. The spec was tabled under the wrong PFL #.
- Implementation of GOTF changes for ORT degraded heads issue in PCO17.4.
 - Raw BER Spec in P_FORMAT_ZONE_ERROR_RATE.
 - Max_Jump Spec in P135_AGC_BASELINE_JUMP.
 - Burnish Spec in AFH3.
- Between all specs (ISI, ET, Drive, ADG), we have coverage on 7 failures.
- Additionally investigating a potential anomaly/interaction between VBAR and AFH in PFL-3299.
- LCO focus will shift to PCO17.4 implementation with the improvements outlined above.

ORT Fix Effectiveness

| Failure Mode | FE% | Comments / Requirements |
|---------------------------|------|--|
| Degraded / Unstable Heads | 68% | 7 of 9 failures caught with Upstream + Cert specs. Spec criteria must be permanently made in a PCO and/or upstream spec |
| 1D Alphana | 100% | 1D / Alphana restriction to SBS |
| NMD | 0% | Assume no |
| Timeout / IOEDC Error | 100% | Based upon agreement that this failure mode is not a customer issue |
| NMD - Reclaim TGAs | 77% | Based upon Suzhou/Korat input. |

154k (1.54%)

Seagate Confidential

Seagate Confidential

| SN | PFL# | Failing Head | Symptom | ttf (hrs) | HD_SN | Proposed Screening Location | Proposed Screen(s) | Yield Impact at Location | Cut-In Date (Tentative) |
|----------|----------|--------------|------------------|-----------|------------|-----------------------------|---|-------------------------------------|--|
| S1D0HH3Y | PFL-3305 | 1 | Head Instability | 53.7 | AL50BIF0V1 | ET | WIJITA(15 max)+SGRNH_F3(1700 max) | 0.08% | Expect STTH cut-in on Feb 7 |
| S1F04WRR | PFL-3299 | 5 | Head Instability | 62.6 | AL50MFHJL0 | | | | |
| W1D0C9W4 | PFL-3355 | 1 | Head Instability | 295.3 | AL509CQB11 | | | | |
| W1D09BNP | PFL-2954 | 1 | Degraded Head | 297.2 | AL507PHKJ1 | ET Drive CERT | TP_NLUMP(20 max) RAW_ERROR_RATE<2.1 | 0.07% ~1% | Expect STTH cut-in on Feb 7 Paper Sort + PCO17.4 |
| W1D0CA1T | PFL-3388 | 1 | Degraded Head | 162.3 | AL50EF73X1 | ISI Drive CERT | SMAN_AMP_MAX > 1700 and SMANMAX_MAX_MAX > 2100 RAW_ERROR_RATE<2.1 | 0.39% ~1% | Expect PNG cut-in by Feb 9 Paper Sort + PCO17.4 |
| W1E04V4X | PFL-3125 | 1 | Degraded Head | 151.5 | AL50PNYTH1 | ET Drive CERT | TP_PLUMP(-2min) + CTQ_NORM_NSE(0.13max) RAW_ERROR_RATE<2.1 | 0.38% ~1% | Expect STTH cut-in on Feb 7 Paper Sort + PCO17.4 |
| Z1F0C5DK | PFL-3162 | 5 | Degraded Head | 411.8 | AL506GQ9J1 | ET Drive ADG | TP_PLUMP(-2min) + TCO_SLN (2.2 max) Possibly prevent reCERT for EC10504 along with other potential ECs | 0.23% None | Expect STTH cut-in on Feb 7 Drive PE Team working Issue |
| Z1F0CM95 | PFL-3094 | 2 | Degraded Head | 98.7 | AL50GA1IT1 | Drive CERT | MAX_JUMP>140 in P135_AGC_BASELINE_JUMP for ACTIVE_HEATER=W | ~1% | Paper Sort + PCO17.4 |
| Z1F0ELHT | PFL-3232 | 1 | Degraded BER | 56.0 | AL50I2ASZ1 | Drive CERT | DELTA_BURNISH_CHECK>=5 in P_AFH_DH_BURNISH_CHECK for ACTIVE_HEATER=R and STATE_NAME=AFH3 and TEST_TYPE=BURNISH | ~ 0.19% head-level drive fallout | Paper Sort + PCO17.4 |

| ORT 9x failure | | | | | | | Proposed Screen Location | | | | | | | | | | | | | | |
|----------------|------------|----------|---------|------------------|----------|------------|--|----------|----------|----------|---|-------|--|-------|--------------------|-----------------------------|------------------|------------------|------|------|------|
| Cap | SERIAL_NUM | PFL# | Fail_Hd | SYMPTOM | ttf(hrs) | HD_SN | Drive level | | | | ET level | | ISI level | | Final screen level | 1TB (simulation) | 2TB (simulation) | 3TB (simulation) | | | |
| | | | | | | | Criteria | 1TB %Rej | 2TB %Rej | 3TB %Rej | Criteria | %Rej | Criteria | %Rej | | % Drive Impact | % Drive Impact | % Drive Impact | | | |
| 1TB | S1D0HH3Y | PFL-3305 | 1 | Head Instability | 53.7 | AL50BIF0V1 | | | | | WJITA(15max) + (V23)SGRNH_F3(1,700max) | 0.08% | | | HGA | 0.0% | 0.0% | 0.4% | | | |
| 1TB | W1D0C9W4 | PFL-3355 | 1 | Head Instability | 295.3 | AL509CQB11 | | | | | | | | | | - | - | - | | | |
| 1TB | W1D09BNP | PFL-2954 | 1 | Degraded Head | 297.2 | AL507PHKJ1 | RAW_BER <2.1 (P_FORMAT_ZONE_ERROR_RATE) | 3.0% | 9.0% | 18% | TP_NLUMP(20max) | 0.07% | | | HGA | 0.6% | 1.6% | 2.5% | | | |
| 1TB | W1D0CA1T | PFL-3388 | 1 | Degraded Head | 162.3 | AL50EF73X1 | RAW_BER <2.1 (P_FORMAT_ZONE_ERROR_RATE) | 3.0% | 9.0% | 18% | | | SMAN_AMP_AVG > 1700 and SMAN_MAX_MAX> 2100 | 0.39% | SLIDER | 0.4% | 1.5% | 2.1% | | | |
| 3TB | S1F04WRR | PFL-3299 | 5 | Head Instability | 62.6 | AL50MFHJL0 | | - | - | - | | | | | | | | | | | |
| 3TB | Z1F0C5DK | PFL-3162 | 5 | Degraded Head | 411.8 | AL506GQ9J1 | | | | | TP_PLUMP(-2min) + TCO_SLN(2.2max) | 0.23% | | | HGA | 0.2% | 0.0% | 0.4% | | | |
| 3TB | Z1F0CM95 | PFL-3094 | 2 | Degraded Head | 98.7 | AL50GA1IT1 | MAX_JUMP>140 in P135_AGC_BASELINE_JUMP for ACTIVE_HEATER=W | 0.0% | 0.1% | 0.3% | | | | | DRIVE | 0.0% | 0.1% | 0.3% | | | |
| 3TB | Z1F0ELHT | PFL-3232 | 1 | Degraded BER | 56 | AL50I2ASZ1 | DELTA_BURNISH_CHECK < -5 (in P_AFH_DH_BURNISH_CHECK for ACTIVE_HEATER=R,STATE_NAME=AFH3,TEST_TYPE=BURNISH) | 0.9% | 0.4% | 1.2% | | | | | DRIVE | 0.9% | 0.4% | 1.2% | | | |
| 2TB | W1E04V4X | PFL-3125 | 1 | Degraded Head | 151.5 | AL50PNYTH1 | RAW_BER <2.1 (P_FORMAT_ZONE_ERROR_RATE) | 3.0% | 9.0% | 18% | TP_PLUMP(-2min) + CTQ_NORM_NSE(0.13max) | 0.38% | | | HGA | 0.5% | 1.8% | 2.2% | | | |
| | | | | | | | | | | | | | | | | Combine criteria | | | 2.6% | 5.4% | 9.1% |
| | | | | | | | | | | | | | | | | Total Qty FNC2 passer drive | | | 1415 | 2411 | 1040 |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

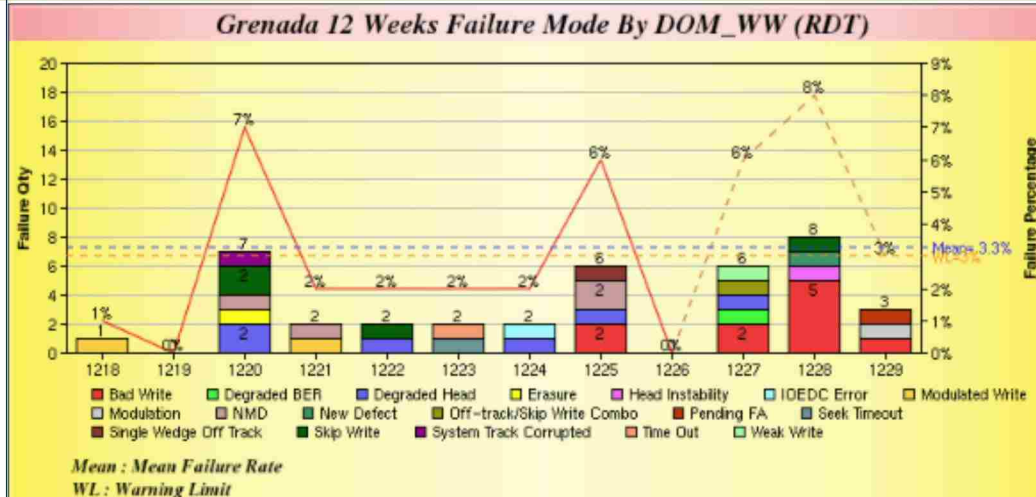
RDT issue

- Degraded Head (8x), failure rate: 0.55%
 - o Root cause: 1. Degraded Head from 20A DLC Heads; 2. Degraded Head from 22A DLC head with PCO16.2, unstable head from BP4.5/22A
 - o CA: 1. 22A DLC; AFH 35.3; AFS 8.2 New SER Spec in PCO 12.7 for the 20A Heads; 2. HMRB9.7B (25% cut in WW06); GOTF Opportunity (PCO17.4 - WW37); Upstream ISI/ET Opportunity (WW34)
 - o Cut in date: 1. 100% 22A DLC head plan to implement in DOM1231.

- NMD(5x), failure rate: 0.44%
 - o Root cause: Contamination
 - o CA: MQM Tuning (WW33); Servo code changes (WW35); Cleanliness builds results (WW36); Factory particulate cleanup (WW34)

- Bad Write(10x), failure rate: 0.83%
 - o Root cause: Bad Write due to Poor preamp precomp OPTI picks.
 - o CA: PCO17.3. Based on OEM RDT TI PFLs that have been fix validated. PCO17.3 cut in on Jan27 for all sites.

RDT Chart

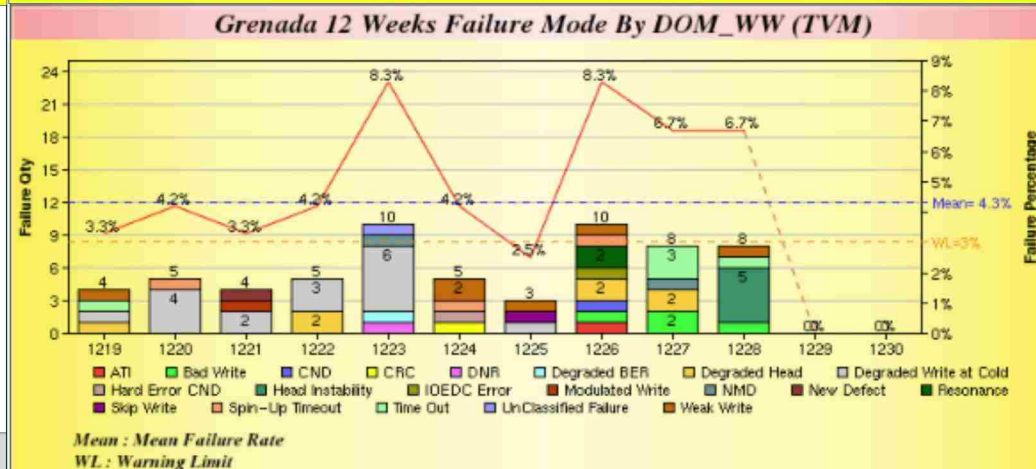


TVM issue

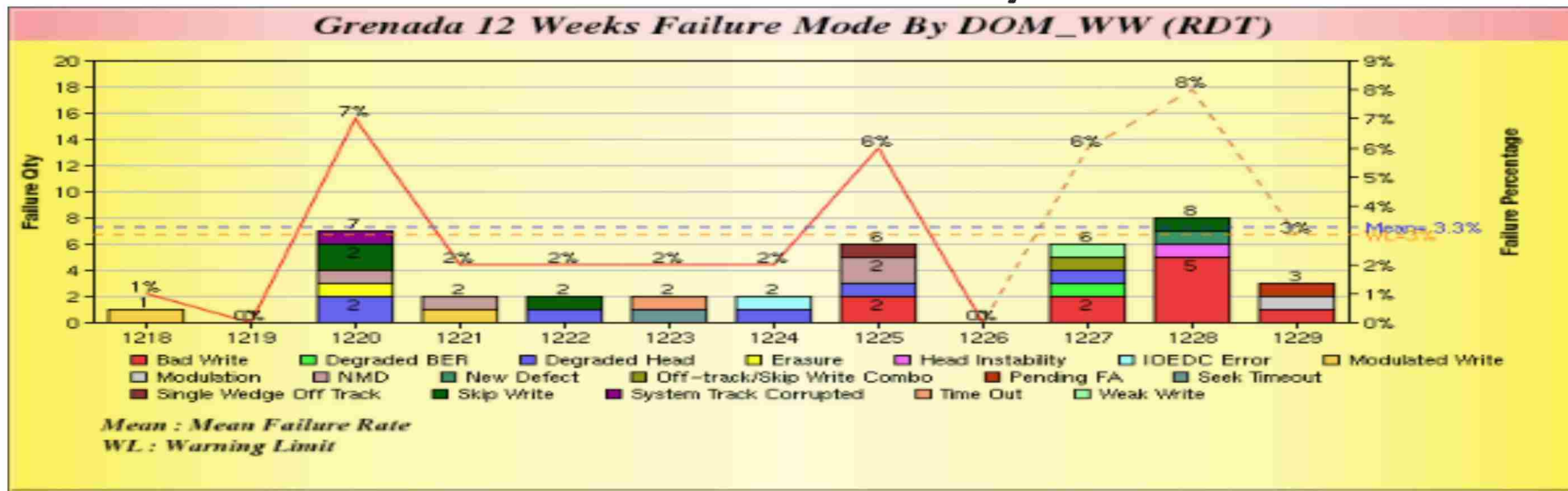
- Degraded Write at cold(17x), failure rate: 1.3%
 - o Root cause: 1. failures from PCO12.7 found poor HMS capacity at CAL2; 2. failures with PCO16.2 under further FA
 - o CA: 1. Using VBAR by HMS in PCO16.2 to close failures with PCO12.7, some of the failures were shipped to LCO for further FA

- Head Instability(6x) and Degraded Head(8x), failure rate: 1.0%
 - o Root cause: Unstable head from BP4.5/22A
 - o CA: HMRB9.7B (25% cut in WW06); GOTF Opportunity (PCO17.4 - WW37); Upstream ISI/ET Opportunity (WW34)

TVM Chart

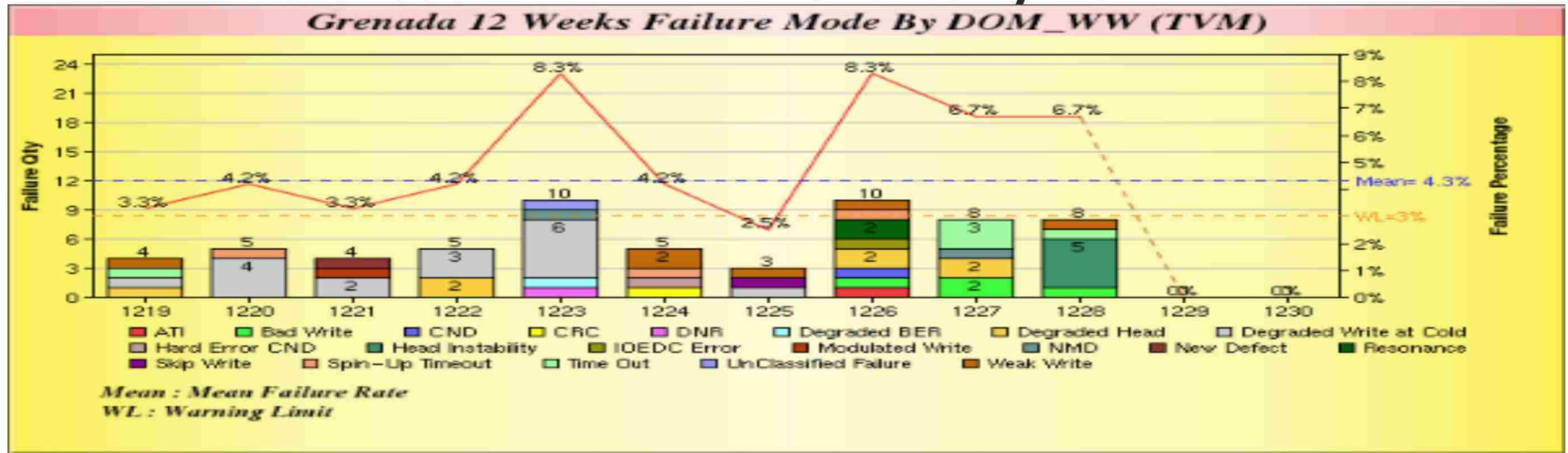


PDMT no issue



- RDT failure rate trigger in DOM1220, no drives in FGI and WIP when trigger, no SSO. 2x Degraded Head from 20A DLC head, CA: 22DLC head; 2xSkip Write and 1xEasure, CA: PCO17.2; 1xNMD, drive was torn down without DC mark; 1xSystem Track Corrupted FA in LCO.
- RDT failure rate trigger in DOM1225, pending follow up. 2xBad Write due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 2xNMD, PFL-3061/3137, MSL completed, pending LCO review; 1xDegraded Head(PFL-3094), pending further FA in LCO; 1xSWOT(PFL-3297), pending further FA.
- RDT failure rate trigger in DOM1228, pending follow up. 2xBad Write due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 1xHead Instability(PFL-3299); 1xWeak Write(PFL-3303); 1xNew Defect(PFL-3298) pending LCO Review and 1xpending 1st level FA(PFL-3365)
- RDT failure rate trigger in DOM1227 , pending follow up. 1xOff-track/Skip Write Combo, 1D Alphana, CA:? 2xBad Write due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 2xDegraded Head(PFL-3232/3388), CA: HMRB9.7B (25% cut in WW06); GOTF Opportunity (PCO17.4 - WW37); Upstream ISI/ET Opportunity (WW34); 1xWeak Write(PFL-3393), drive ship to LCO for further FA on 2/3/2012.
- RDT failure rate trigger in DOM1228 , pending follow up. 5xBad Write due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 1xHead Instability(PFL-3299), CA: HMRB9.7B (25% cut in WW06); GOTF Opportunity (PCO17.4 - WW37); Upstream ISI/ET Opportunity (WW34); 1xSkip Write(PFL-3365), CA:PCO17.2+; 1xNew Defect(PFL-3298), Pending MFA and MSL.

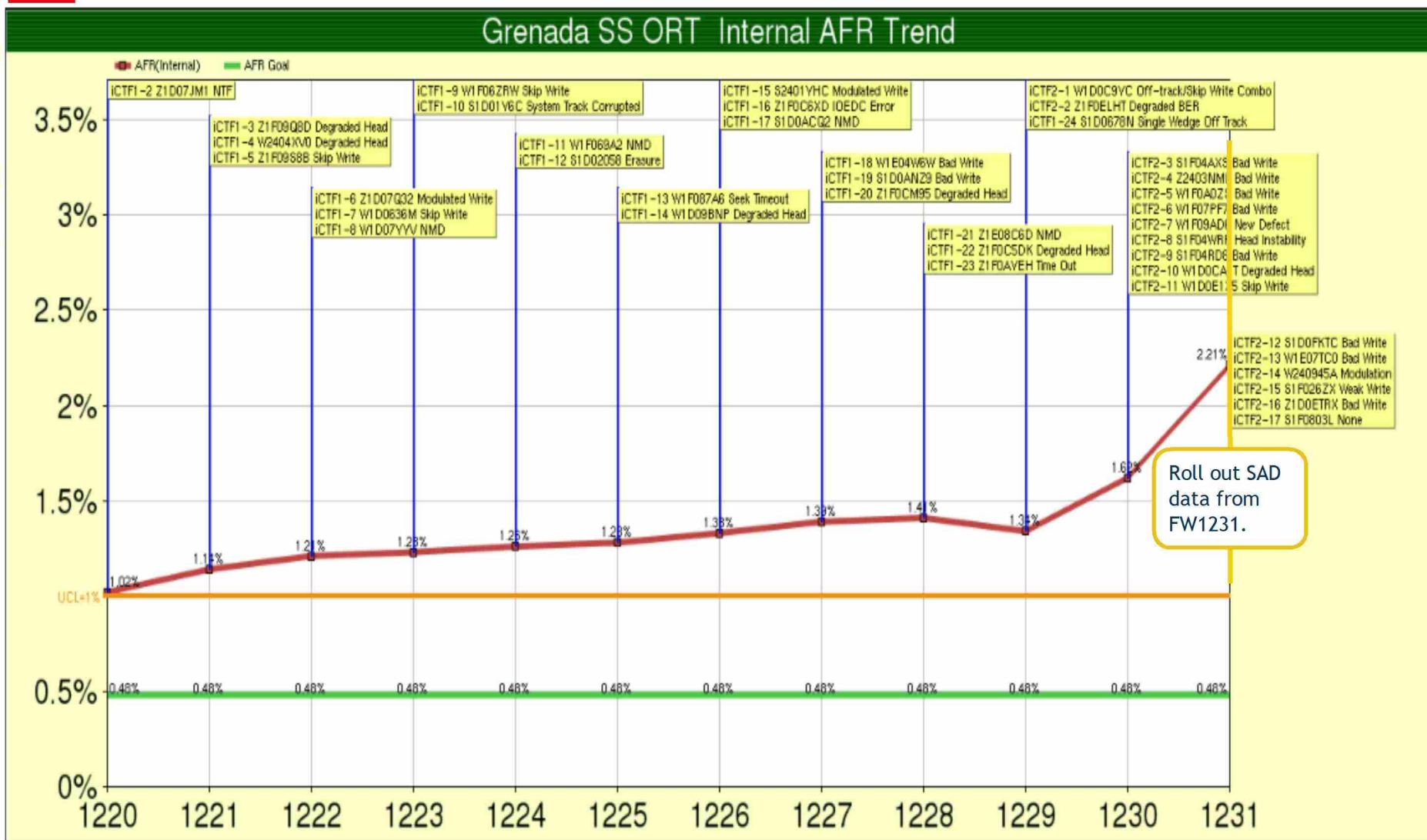
Grenada TVM 12wks Failures by DOM WW



1. TVM failure rate trigger in DOM1223 due to high failure rate of degraded Write at cold, on hold drives with PCO12.7 in FGI and WIP in all 3x sites and re-cert with PCO16.2(VBAR by HMS); PCO 17.3 with new feature TCS is designed to fix failures with PCO16.2. PCO under check out.
2. TVM failure rate trigger in DOM1226, SSO Wuxi drives of this week in FGI and WIP(WUX 0081) due to higher failure rate (11.7%, 7 failures out of 60 Wuxi drives). 1xWeak Write due to poor HMS with PCO12.7, CA: PCO16.2(VBAR by HMS); 2xBad Write due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 1xWeak Write with PCO16.2, CA: Default TCS in PCO17.3; 1xResonance, Tail tack issue See similar issue in PFL-2814, CA: on the HGA line should be driven by process team; 1xIOEDC Error retest pass; 2xCND pending to retest; 1xATI, 1/24 drive arrived in LCO for RC investigation; 1xSpin up Time Out, pending LCO servo team to do further FA.
3. TVM failure rate trigger in DOM1227 , no trigger excluding Time out and Bad Write. 3xTime Out, PFL-3235/3236, pending retest/ PFL-3309, pending LCO review; 2xBad Write(PFL-3267/3246) due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 1xNMD(PFL-3202), pending ship to Wuxi to teardown and get 360 degree candella; 2xDegraded Head(PFL-3241/3282), FA in LCO;
4. TVM failure rate trigger in DOM1228, pending follow up. 1xTime Out, PFL-3308, pending LCO review; 1xBad Write(PFL-3357) due to Poor preamp precomp OPTI picks, CA: New Preamp Opti in PCO 17.3; 5xHead Instalibily(PFL-3307/3358/3373/3374/3377 /3378), pending LCO review; 1xWeak Write(PFL-3378)

Grenada ORT MTBF AFR: 2.21%(MTBF:107,378 hrs)

Case 3:16-cv-00523-JCS Document 150-9 Filed 01/05/18 Page 13 of 34



MTBF based on 12 weeks' normal ORT loading , the MTBF is 107,378hrs.

ORT – Opportunities for MTBF Improvement

Case 3:15-cv-00528-JCS Document 151-9 Filed 01/05/16 Page 14 of 34

- FA on unstable and degraded hga's indicates 5/9 failing heads can be caught with slider and hga spec changes. New TSR for HGA test on line by 2/7 in Korat. 2/9 for ISI spec change in Penang. Criteria can be applied for sorting WIP and FG for hga's and or drives. (criteria attached). More data on Monday 2/7, looking for any other sort criteria or cert screening data.
- Strong correlation to NMD and reclaimed TGA's. DQ'ed reclaimed TGA's effective WW23. Reli to define FE opportunity going forward with this factor removed.
- New MQM from PCO 17.3A available now. Could be implemented 2/6. NMD's occur at hours greater than MQM run time. Reli/Engr to define any FE opportunity.

ORT – Opportunities for MTBF Improvement

Case 3:15-cv-00523-JCS Document 151-9 Filed 01/05/16 Page 15 of 34

- FA from Feather and ORT/ODT NMD's indicate large high frequency PZT commands can occur in current code. These have been proven to create NMD. Code fix in test over the weekend. Available 2/8-10 for release. Estimate 30+% reduction in NMD's
- Strong correlation to NMD and JIT mode. JIT 0 vs JIT 3 differences under investigation by Servo team. This correlation may be effected by fixes addressed above. Evaluating opportunity for JIT3 mode in Disty until root cause is closed with JIT 0 seeks, performance data and JIT 0 characterization by 2/8-10. Estimate 30%+ reduction in NMD's.
- Particle reduction efforts in progress. Details captured in later slides. BOB builds delayed until WW35-36. Estimate 20% reduction in NMD's with numerous improvements.

ORT / TVM Pareto

| QTY | Symptom | ORT PFLS, ttf | TVM PFL's, TTF, T |
|-----|---------------------------------|---|---|
| 10 | Bad Write | N/R | |
| 9 | Degraded heads | 2954, 297 3094, 98 3162, 411 2643, 13 2664, 48 3001, 122 3000, 311 2789, 71 | 3182, 115 hrs, 0C 3141, 65hrs, 60C 2914, 258 hrs, 25C 2872, 173hrs, 0C |
| 8 | NMD's | 2721, 4 3061, 5 3137, 222 3298, 55 2835, 439 3254, 261 3230, 9 3126, 157 3012, 399 3379, 172 | 3202, 8hrs, 27C 3014, 167hrs, 60C 2750, 19 hrs, 25C |
| 5 | Skip writes | N/R | 3057, .8hrs, 25C 2682, 86 hrs, 0C |
| 3 | Instability | 3299, 62 3305, 53 3310, 17 | 3307, 64hrs, 60C 3377, 190hrs, 60C 3241, 93hrs, 60C |
| 3 | Modulated Write | 2663, 379 3010, 548 2814, 13 | 2763, 76hrs, 0C 3183, 116hrs, 0C 3135, 36hrs, 25C |
| 15 | Degraded write at cold, PCO16.x | | |

FA team working component analysis.

RHO F/A (including upstream analysis), has consistently shown the fix to be HMRB9.7+ . Scott Deits to provide update.

FA team to provide detailed failure summary to the NMD team – head, zone, TTF, build week, suspension vendor, reclaim, prime/rework.

Skip writes improved from PCO12.6 to 16.2 (which has SWD in run-time). PCO17.3 has better tuning. CO17.3 RDT and TVM to date have no SW failures. FA team working on presenting FE data to Reli.

Instability failures are usually also degraded (changed from cert). FA team working to categorize which PFL's changed from cert.

Varity pack: tail tack (~8Khz), Alphana, 47kHz.

PCO17.4 contains THS.

Cleanliness Build Overview

Best Practices Cleanliness Builds

- **5 weeks of drive builds, 5K per week starting WW30**
 - Splitting builds 50/50 - Seagate Wuxi vs Kaifa HSAs
 - Coordinating media to be same lot and sputter machine on both Grenada and Bacall builds in each WW
 - Prime suspensions in all builds
 - Evaluating with and without short GIO (4.5 hrs TT)
- **All processes and inspection plans are documented and agreed to through FOF cleaning (details available if needed)**
 - Only open item is at HGA ET and disk usage (under discussion with RHO) –
 - » HGA ET is the point for added contamination based on line mapping
- **Expect first results WW32 from LODT (delayed 1 week)**
 - WW32 will be first results with Short GIO
- LCO Support teams headed to China End of January

First week cleanliness builds status:

- Wafer defect lost 1/3 of sliders
- Finding contamination on 1.5% (LE comb) in first batch inspections – will continue on with this weeks builds, and address in following week's batch
 - Need confirmation on Bacall material availability, Grenada material running short
- Real data after pipe cleaner builds available WW35-36!

Cleanliness builds - Changes & additional monitoring:

Slider:

- Post SCBD LE Wiping
- Post DEB 192kHz cleaning
- Post Polish 192kHz cleaning
- Soak block Polish / cleaning changes
- Additional Inspections (Visual, SeaTape, MSL)

HGA

- Additional Inspections (Visual, SeaTape, MSL)

HSA

- No Marposs
- Additional Inspections

FOF

- Long checklist of data reviews and big clean items

NMD Code improvements (Core team input)

Activity 1 - PCO17.3A (New MQM):

Feb 4 - Factory scheduled to start L-ODT demo build

Feb 8 - Finish L-ODT & publish results. If results look good, then:

Feb 9 - Mass pro cut in.

Activity 2 - JIT3 F3 code:

Feb 6 - Start SIE & Reli testing

Feb 9 - Finish SIE & Reli testing

Feb 10 - Mass pro cut in.

Activity 3 - New Servo code:

Feb 6 : Start Reli & SIE with code that looks best by monday, followed by 1 week to run, find issues, fix issues etc.

Feb 10 : we will have bench verification of either code - by Dave O LDV work & Bench signal analysis (Servo team / Abhay)

Feb 13 : Finish Reli & SIE successfully.

Feb 14 : Push to implement in masspro.

TGA Fix Effectiveness

| Failure Mode | Config | | Fails | Total | Failure Rate |
|--------------|------------|----------------|-------|-------|--------------|
| NMD | hga_vendor | A | 0 | 4 | 0.00% |
| | | B(reclaim TGA) | 1 | 51 | 1.96% |
| | | I | 2 | 218 | 0.92% |
| | | M | 0 | 16 | 0.00% |
| | | O | 0 | 574 | 0.00% |
| | | N | 2 | 87 | 2.30% |
| | | 0 | 0 | 15 | 0.00% |
| | | R | 0 | 7 | 0.00% |
| | | 7 | 0 | 28 | 0.00% |

| | | | | |
|------------------------------|----------------|---|-----|-------|
| TGA subtotal from HGA vendor | Reclaim TGA(B) | 1 | 51 | 1.96% |
| | Other TGA | 4 | 949 | 0.42% |

| | | | | |
|-------------------|-------------|--------------------|------------------|----------|
| Fix Effectiveness | Sample Size | Number of Failures | Confidence Level | % Defect |
| | 51 | 1 | 60% | 3.926% |
| | 949 | 4 | 60% | 0.551% |
| | | | | |
| | | Fix Validation = | | 85.95% |

Bai Tao

Seagate Confidential
Seagate Confidential

| SN | PFL# | Failing Head | Symptom | ttf (hrs) |
|----------|----------|--------------|------------------|-----------|
| S1D0HH3Y | PFL-3305 | 1 | Head Instability | 53.7 |
| S1F04WRR | PFL-3299 | 5 | Head Instability | 62.6 |
| W1D0C9W4 | PFL-3355 | 1 | Head Instability | 295.3 |
| W1D09BNP | PFL-2954 | 1 | Degraded Head | 297.2 |
| W1D0CA1T | PFL-3388 | 1 | Degraded Head | 162.3 |
| W1E04V4X | PFL-3125 | 1 | Degraded Head | 151.5 |
| Z1F0C5DK | PFL-3162 | 5 | Degraded Head | 411.8 |
| Z1F0CM95 | PFL-3094 | 2 | Degraded Head | 98.7 |
| Z1F0ELHT | PFL-3232 | 1 | Degraded BER | 56 |

- 9 degraded/unstable heads in ORT have caused the MTBF to drop.
- Previously, the AFR trajectory had closely mimicked the OEM RDT trajectory, but has diverged in the last two weeks or so.

Actions being pursued:

- Detailed Configuration Analysis:
 - RHO analysis complete (Brian Mangnuson). No clear configuration trend observed.
 - RMO analysis under way (Arhsee Lumbay).
- Drive CERT Analysis:
 - LCO team working – under way (Scott Deits, Krishnan S.).
- RHO upstream Spec Analysis:
 - 1st pass complete (Joel Nathe, Song Liu). Looks promising on 5/9 failures.

Upstream Percentile Analysis (Some signatures seen in ISI testing)

| | AL506GQ9J1 | AL507PHKJ1 | AL509CQB11 | AL50BIF0V1 | AL50EF73X1 | AL50GA1IT1 | AL50I2ASZ1 | AL50MFHJL0 | AL50PNYTH1 |
|-----------------|---------------|---------------|------------------|------------------|---------------|---------------|--------------|------------------|---------------|
| HD_SN | AL506GQ9J1 | AL507PHKJ1 | AL509CQB11 | AL50BIF0V1 | AL50EF73X1 | AL50GA1IT1 | AL50I2ASZ1 | AL50MFHJL0 | AL50PNYTH1 |
| SN | Z1F0C5DK | W1D09BNP | W1D0C9W4 | S1D0HH3Y | W1D0CA1T | Z1F0CM9S | Z1F0ELHT | S1F04WRR | W1E04V4X |
| PFL# | PFL-3162 | PFL-2954 | PFL-3355 | PFL-3305 | PFL-3388 | PFL-3094 | PFL-3232 | PFL-3299 | PFL-3125 |
| Failing Head | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 5 | 1 |
| Symptom | Degraded Head | Degraded Head | Head Instability | Head Instability | Degraded Head | Degraded Head | Degraded BER | Head Instability | Degraded Head |
| ttf (hrs) | 411.8 | 297.2 | 295.3 | 53.7 | 162.3 | 98.7 | 56 | 62.6 | 151.5 |
| Test Date | 11/8/2011 | 10/25/2011 | 11/23/2011 | 11/30/2011 | 11/23/2011 | 11/19/2011 | 11/15/2011 | 11/12/2011 | 11/29/2011 |
| RES | 280.05 | 265.69 | 275.37 | 325.48 | 282.84 | 309.14 | 300.71 | 295.02 | 369.05 |
| Pop_Percentile | P50-P75 | P25-P50 | P25-P50 | P75-P90 | P50-P75 | P75-P90 | P50-P75 | P50-P75 | P95-P99 |
| AMP | 17275.392 | 8452.229 | 11585.051 | 18257.144 | 10720.478 | 17242.874 | 9568.709 | 9710.117 | 9478.778 |
| Pop_Percentile | P95-P99 | P10-P25 | P50-P75 | P95-P99 | P50-P75 | P95-P99 | P25-P50 | P25-P50 | P25-P50 |
| ASYM | 5.823 | 12.036 | 10.007 | -0.058 | -6.374 | 4.367 | 14.648 | 20.477 | 2.543 |
| Pop_Percentile | P25-P50 | P75-P90 | P50-P75 | P10-P25 | P5-P10 | P25-P50 | P75-P90 | P95-P99 | P25-P50 |
| BARK_JMP | 3.244 | 3.436 | 3.157 | 1.608 | 3.573 | 3.502 | 5.814 | 5.383 | 3.93 |
| Pop_Percentile | P25-P50 | P50-P75 | P25-P50 | P5-P10 | P50-P75 | P50-P75 | P75-P90 | P75-P90 | P50-P75 |
| HYST_PCT | 2.071 | 2.422 | 2.125 | 1.95 | 2.528 | 2.168 | 4.418 | 2.455 | 3.503 |
| Pop_Percentile | P10-P25 | P25-P50 | P10-P25 | P10-P25 | P25-P50 | P25-P50 | P75-P90 | P25-P50 | P50-P75 |
| MAX_SLOPE_AT | -17.955 | -450.056 | -529.993 | -2.036 | 323.997 | -351.961 | -355.94 | -18.078 | -414.039 |
| Pop_Percentile | P50-P75 | P10-P25 | P10-P25 | P50-P75 | P90-P95 | P25-P50 | P25-P50 | P50-P75 | P25-P50 |
| MAX_SLOPE_PCT | 84.023 | 238.539 | 174.285 | 78.867 | 98.949 | 174.017 | 187.694 | 237.798 | 244.93 |
| Pop_Percentile | P10-P25 | P75-P90 | P50-P75 | P10-P25 | P25-P50 | P50-P75 | P50-P75 | P75-P90 | P75-P90 |
| STD_MAX_SLOPE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pop_Percentile | P1-P99 | P1-P99 | P1-P99 | P1-P99 | P1-P99 | P1-P99 | P1-P99 | P1-P99 | P1-P99 |
| SMAN_AMP_AVG | 385.532 | 494.666 | 380.258 | 398.364 | 1759.981 | 367.775 | 494.624 | 556.683 | 748.097 |
| Pop_Percentile | P25-P50 | P50-P75 | P25-P50 | P25-P50 | P99 | P25-P50 | P50-P75 | P50-P75 | P75-P90 |
| SMAN_MAX_MAX | 615.541 | 756.056 | 501.859 | 714.404 | 2135.357 | 432.866 | 638.568 | 691.283 | 1101.95 |
| Pop_Percentile | P50-P75 | P50-P75 | P25-P50 | P50-P75 | P99 | P10-P25 | P50-P75 | P50-P75 | P90-P95 |
| SMAN_NORM | 7.126 | 17.89 | 8.664 | 7.826 | 39.837 | 5.021 | 13.347 | 14.238 | 23.251 |
| Pop_Percentile | P10-P25 | P75-P90 | P25-P50 | P10-P25 | P99 | P99 | P50-P75 | P50-P75 | P25-P50 |
| HTR_RES | 62.761 | 62.264 | 60.413 | 598.682 | 67.161 | 61.76 | 64.259 | 62.018 | 62.722 |
| Pop_Percentile | P25-P50 | P25-P50 | <P1 | >P99 | P50-P75 | P5-P10 | P50-P75 | P10-P25 | P25-P50 |
| SMTH_DTRND_MX | 28.35 | 43.628 | 7.018 | 27.693 | 7.58 | 24.704 | 21.844 | 29.249 | 37.429 |
| Pop_Percentile | P75-P90 | P95-P99 | P1-P5 | P75-P90 | P1-P5 | P50-P75 | P50-P75 | P75-P90 | P90-P95 |
| SMTH_DTRND_MX | 0.021 | 18.073 | -13.948 | 60.082 | -96.004 | -67.974 | -39.957 | -18.078 | -405.924 |
| Pop_Percentile | P50-P75 | P50-P75 | P25-P50 | P75-P90 | P25-P50 | P25-P50 | P25-P50 | P25-P50 | P5-P10 |
| MAX_STEP_PCT | -1.193 | -6.017 | 4.551 | -1.944 | -2.84 | -6.299 | -3.63 | -6.228 | -5.664 |
| Pop_Percentile | P50-P75 | P5-P10 | P75-P90 | P50-P75 | P25-P50 | P5-P10 | P25-P50 | P5-P10 | P10-P25 |
| JUMP_CNT | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| Pop_Percentile | P1-P50 | P75-P90 | P1-P50 | P1-P50 | P1-P50 | P75-P90 | P1-P50 | P90-P95 | P1-P50 |
| SPIKE_CNT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Pop_Percentile | P1-P75 | P1-P75 | P1-P75 | P1-P75 | P1-P75 | P1-P75 | P1-P75 | P95-P99 | P1-P75 |
| BARKJMP_RMS | 0.425 | 0.534 | 0.667 | 0.393 | 1.2 | 0.547 | 1.683 | 0.818 | 0.941 |
| Pop_Percentile | P10-P25 | P25-P50 | P50-P75 | P5-P10 | P75-P90 | P25-P50 | P95-P99 | P50-P75 | P75-P90 |
| WGHT_AVG_MX_SL | 60.04 | 69.834 | 49.848 | 53.087 | 60.307 | 59.434 | 90.486 | 123.42 | 199.106 |
| Pop_Percentile | P25-P50 | P50-P75 | P25-P50 | P25-P50 | P25-P50 | P25-P50 | P50-P75 | P75-P90 | P95-P99 |
| JUMP_PCT_ATPK_S | 1.387 | 1.948 | 2.198 | 1.506 | 2.824 | 2.135 | 4.871 | 4.574 | 3.93 |
| Pop_Percentile | P10-P25 | P25-P50 | P50-P75 | P25-P50 | P50-P75 | P50-P75 | P90-P95 | P75-P90 | P75-P90 |
| JUMP_PT_AT_RPS | 1.524 | 1.314 | 2.833 | 1.052 | 3.233 | 1.411 | 4.714 | 4.641 | 2.365 |
| Pop_Percentile | P25-P50 | P10-P25 | P50-P75 | P5-P10 | P50-P75 | P10-P25 | P75-P90 | P75-P90 | P50-P75 |
| JUMP_PT_AT_RPS | 0.91 | 1.373 | 2.78 | 1.483 | 2.931 | 1.634 | 3.341 | 1.659 | 2.365 |
| Pop_Percentile | P5-P10 | P25-P50 | P50-P75 | P25-P50 | P75-P90 | P25-P50 | P75-P90 | P25-P50 | P50-P75 |

Current ISI_FACT population has 7116654 unique heads from the 186 wafers that had test data up to 2012/02/02
Seagate Confidential

- PFL-3388 has several parameters that exhibit outlier behavior.
- Extreme outlier for SMAN noise metrics.
- Should be amenable to easy upstream screening.
- RHO/Penang Teams looking at SMAN spec yield repercussions.
 - High confidence that a spec like SMAN_AMP_AVG > 1700 can be effected quickly.

Courtesy of Joel Nathe

Upstream Percentile Analysis (Some signatures seen in ET testing)

| Individual values vs. total Current Population | | | | Individual values vs. total Current Population | | | | | | |
|--|---------------|---------------|---------------|--|----------------|------------------|------------------|---------------|--------------|------------------|
| | AL506GQ9J1 | AL507PHKJ1 | AL50GA1IT1 | | AL509CQBI1 | AL50BIF0V1 | AL50EF73X1 | AL50I2ASZ1 | AL50MFHJL0 | |
| HD_SN | AL506GQ9J1 | AL507PHKJ1 | AL50GA1IT1 | | SN | AL509CQBI1 | AL50BIF0V1 | AL50EF73X1 | AL50I2ASZ1 | AL50MFHJL0 |
| SN | Z1F0C5DK | W1D09BNP | Z1F0CM95 | | PFL# | W1D0C9W4 | S1D0HH3Y | W1D0CA1T | Z1F0ELHT | S1F04WRR |
| PFL# | PFL-3162 | PFL-2954 | PFL-3094 | | Failing Head | PFL-3355 | PFL-3305 | PFL-3388 | PFL-3232 | PFL-3299 |
| Failing Head | 5 | 1 | 2 | | Symptom | 1 | 1 | 1 | 1 | 5 |
| Symptom | Degraded Head | Degraded Head | Degraded Head | | ttf (hrs) | Head Instability | Head Instability | Degraded Head | Degraded BER | Head Instability |
| ttf (hrs) | 411.8 | 297.2 | 98.7 | | | 295.3 | 53.7 | 162.3 | 56 | 62.6 |
| Test Date | 11/19/2011 | 11/6/2011 | 11/27/2011 | | Test Date | 12/15/2011 | 12/14/2011 | 12/15/2011 | 12/5/2011 | 12/24/2011 |
| Test Type | PRODUCTION | PRODUCTION | PRODUCTION | | Test Type | PRODUCTION | PRODUCTION | PRODUCTION | PRODUCTION | PRODUCTION |
| TSR Name | BMC6AL5P | BMC6AL5P | BMC6AL5P | | TSR Name | BM20AL5P | BM20AL5P | BM20AL5P | BM20AL5P | BM20AL5P |
| TSR Num | null | 45717 | null | | TSR Num | null | null | 45844 | null | null |
| CTQ_AMP | 15328.6271 | 8694.5689 | 47517.8731 | | CTQ_AMP | 11138.9569 | 19667.1443 | 11060.0591 | 9347.9659 | 9229.119 |
| Pop_Percentile | P90-P95 | P25-P50 | P95-P99 | | Pop_Percentile | P50-P75 | >P99 | P50-P75 | P25-P50 | P25-P50 |
| CTQ_ASYM | 3.3131 | 10.2901 | -4.8596 | | CTQ_ASYM | 4.8465 | -7.3379 | -5.9912 | 5.2155 | 6.4179 |
| Pop_Percentile | P50-P75 | P95-P99 | P1-P5 | | Pop_Percentile | P50-P75 | P1-P5 | P1-P5 | P50-P75 | P75-P90 |
| CTQ_BER | -3.9487 | -3.2487 | -3.7058 | | CTQ_BER | -3.6846 | -3.4995 | -4.2502 | -3.8097 | -3.4072 |
| Pop_Percentile | P25-P50 | P75-P90 | P50-P75 | | Pop_Percentile | P50-P75 | P50-P75 | P5-P10 | P25-P50 | P75-P90 |
| CTQ_BSLN_NSE | 0.889 | 1.0204 | 0.8826 | | CTQ_BSLN_NSE | 1.1242 | 0.8037 | 0.8236 | 0.8365 | 1.0138 |
| Pop_Percentile | P25-P50 | P75-P90 | P25-P50 | | Pop_Percentile | P95-P99 | P1-P5 | P5-P10 | P10-P25 | P75-P90 |
| CTQ_CP_CAT | 100 | 600 | 100 | | CTQ_CP_CAT | 100 | 100 | 100 | 100 | 100 |
| Pop_Percentile | P1-P75 | >P99 | P1-P75 | | Pop_Percentile | P1-P75 | P1-P75 | P1-P75 | P1-P75 | P1-P75 |
| CTQ_CP_CLRNC | 7.6881 | 8.2507 | 8.4352 | | CTQ_CP_CLRNC | 9.3121 | 6.4447 | 7.6632 | 9.0226 | 8.8093 |
| Pop_Percentile | P10-P25 | P25-P50 | P50-P75 | | Pop_Percentile | P90-P95 | <P1 | P10-P25 | P75-P90 | P75-P90 |
| CTQ_HGA_ADC | 0.9715 | 0.9632 | 1.0019 | | CTQ_HGA_ADC | 1.0152 | 0.9999 | 0.9704 | 1.0072 | 0.9757 |
| Pop_Percentile | P25-P50 | P25-P50 | P75-P90 | | Pop_Percentile | P95-P99 | P75-P90 | P25-P50 | P75-P90 | P25-P50 |
| CTQ_HTR_RES | 72.7251 | 72.5659 | 70.3701 | | CTQ_HTR_RES | 70.9527 | 71.1653 | 74.8609 | 73.867 | 71.3238 |
| Pop_Percentile | P95-P99 | P90-P95 | <P1 | | Pop_Percentile | P10-P25 | P25-P50 | >P99 | >P99 | P25-P50 |
| CTQ_ISLTN | 0 | 0 | 0 | | CTQ_ISLTN | 0 | 0 | 0 | 0 | 0 |
| Pop_Percentile | P1-P50 | P1-P50 | P1-P50 | | Pop_Percentile | P1-P50 | P1-P50 | P1-P50 | P1-P50 | P1-P50 |
| CTQ_ISLTN_FLAG | 0 | 0 | 0 | | CTQ_ISLTN_FLAG | 0 | 0 | 0 | 0 | 0 |
| Pop_Percentile | P1-P99 | P1-P99 | P1-P99 | | Pop_Percentile | P1-P99 | P1-P99 | P1-P99 | P1-P99 | P1-P99 |
| CTQ_LRG_GLITCH | -3.6408 | -3.6408 | -3.6408 | | CTQ_LRG_GLITCH | -3.6408 | -2.4357 | -3.6408 | -3.6408 | -3.6408 |
| Pop_Percentile | P1-P75 | P1-P75 | P1-P75 | | Pop_Percentile | P75-P90 | P90-P95 | P75-P90 | P75-P90 | P75-P90 |
| CTQ_MOD | 3.4228 | 5.2978 | 4.0758 | | CTQ_MOD | 4.325 | 4.5186 | 6.5607 | 4.8086 | 5.7137 |
| Pop_Percentile | P1-P5 | P50-P75 | P10-P25 | | Pop_Percentile | P25-P50 | P25-P50 | P90-P95 | P25-P50 | P75-P90 |
| CTQ_NORM_NSE | 0.0557 | 0.0676 | 0.0429 | | CTQ_NORM_NSE | 0.0533 | 0.0858 | 0.0829 | 0.0598 | 0.0962 |
| Pop_Percentile | P25-P50 | P50-P75 | P5-P10 | | Pop_Percentile | P25-P50 | P50-P75 | P50-P75 | P25-P50 | P75-P90 |
| CTQ_NSE_DELTA | 193.4454 | 27.3986 | 43.611 | | CTQ_NSE_DELTA | 93.8405 | 397.1849 | 31.9965 | -227.8628 | -116.6536 |
| Pop_Percentile | P75-P90 | P50-P75 | P50-P75 | | Pop_Percentile | P50-P75 | P90-P95 | P50-P75 | P10-P25 | P10-P25 |
| CTQ_OVW | -40.6454 | -31.9852 | -39.1277 | | CTQ_OVW | -33.4324 | -40.551 | -41.9314 | -36.5902 | -37.8691 |
| Pop_Percentile | P25-P50 | P90-P95 | P25-P50 | | Pop_Percentile | P75-P90 | P25-P50 | P10-P25 | P50-P75 | P50-P75 |
| CTQ_POL | 3.2904 | 2.4881 | 4.3332 | | CTQ_POL | | | | 3.599 | |
| Pop_Percentile | P10-P25 | <P1 | P75-P90 | | Pop_Percentile | | | | P25-P50 | |
| CTQ_RD_RES | 271.9942 | 264.685 | 317.0623 | | CTQ_RD_RES | 282.7537 | 328.0096 | 287.8071 | 311.811 | 305.6733 |
| Pop_Percentile | P25-P50 | P25-P50 | P75-P90 | | Pop_Percentile | P50-P75 | P90-P95 | P50-P75 | P75-P90 | P75-P90 |
| CTQ_ROOT_YIELD | 100 | 100 | 100 | | CTQ_ROOT_YIELD | 100 | 100 | 100 | 100 | 100 |
| Pop_Percentile | >P90 | >P90 | >P90 | | Pop_Percentile | >P90 | >P90 | >P90 | >P90 | >P90 |
| CTQ_SRVO_LIN | 0 | 1.2663 | 1.5837 | | CTQ_SRVO_LIN | 1.1239 | 1.3145 | 1.3404 | 1.3458 | 1.3933 |
| Pop_Percentile | <P1 | P10-P25 | P90-P95 | | Pop_Percentile | <P1 | P10-P25 | P25-P50 | P25-P50 | P50-P75 |
| CTQ_WIJITA | 2.9198 | 6.9852 | 3.9643 | | CTQ_WIJITA | 4.427 | 15.5003 | 3.0936 | 4.548 | 4.2761 |
| Pop_Percentile | P25-P50 | P90-P95 | P50-P75 | | Pop_Percentile | P75-P90 | >P99 | P25-P50 | P75-P90 | P75-P90 |

Seagate Confidential

• PFLs-3305, 3299, 2954, and 3232 show multiple ET signatures.

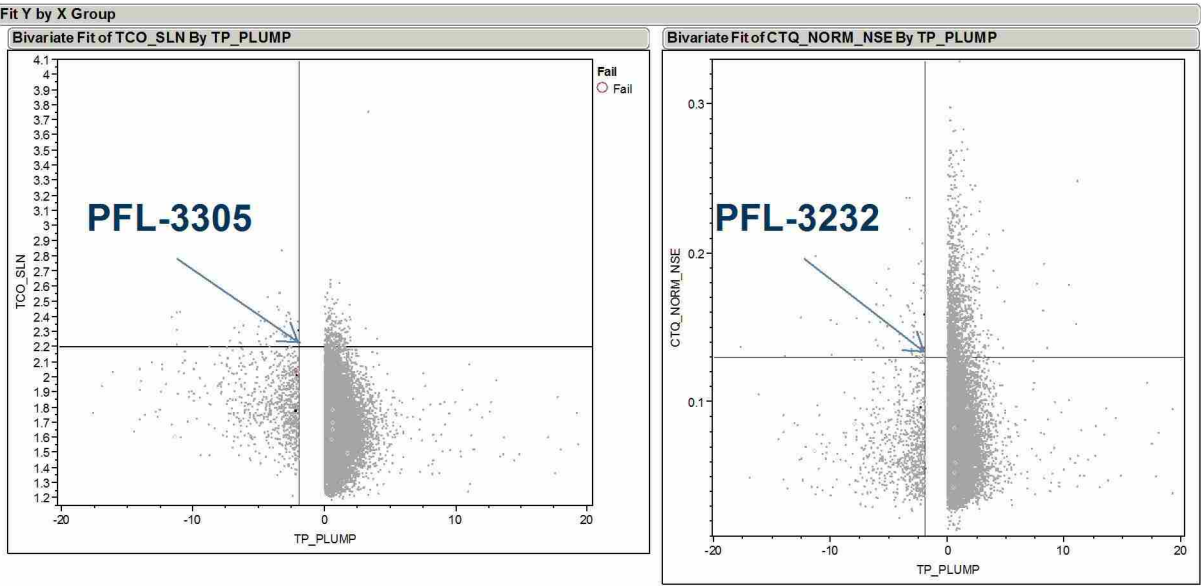
• Should be amenable to Combo Specs.

Courtesy of Joel Nathe

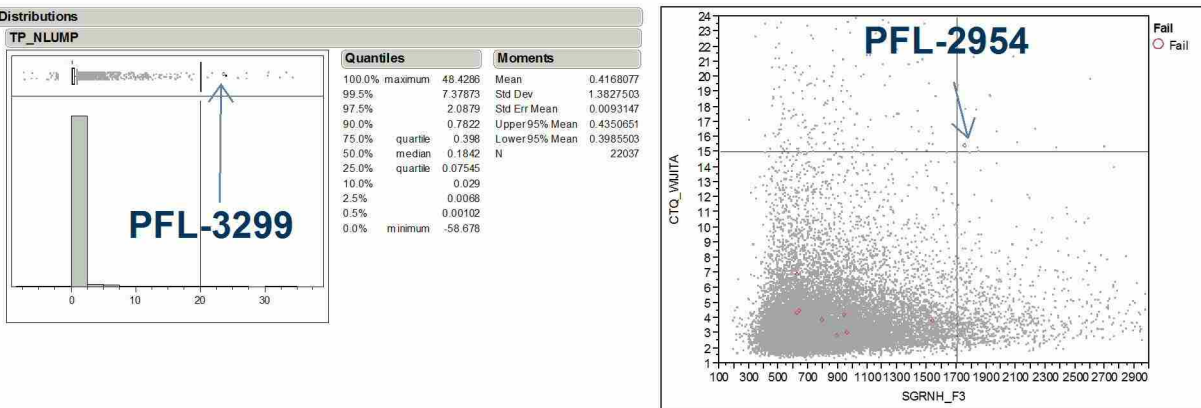
Seagate Confidential

FED_SEAG0009690

Upstream Percentile Analysis (Some signatures seen in ET testing)



Data and Analysis Courtesy of Song Liu

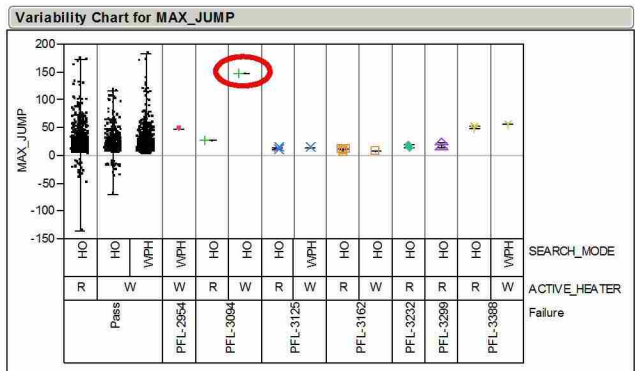
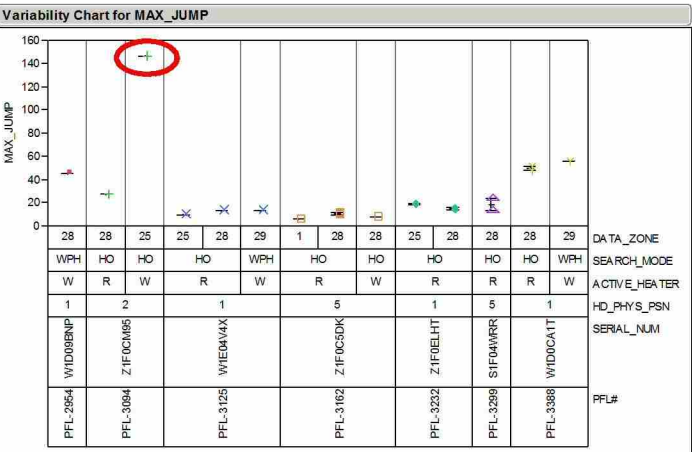


- ET metrics implicated are traditional instability metrics.
- WIJITA: DC Bias Noise test. Catches instabilities well.
 - Track Scan Lump metrics: Has been used to catch unstable heads on Manta Ray.
 - SGRNH F3: SGRO Noise with heater enabled. A glitch metric in read-only mode.
 - CTQ NORM NSE: Normalized Noise metric that usually highlights noisy heads.

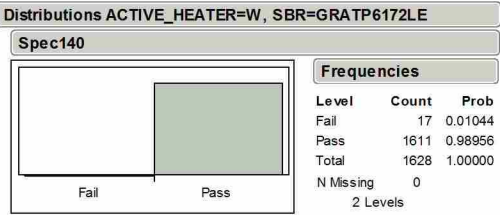
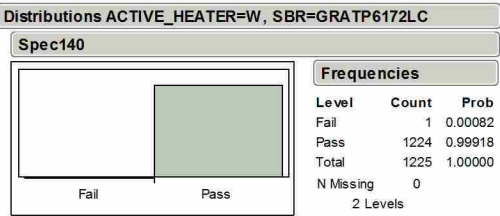
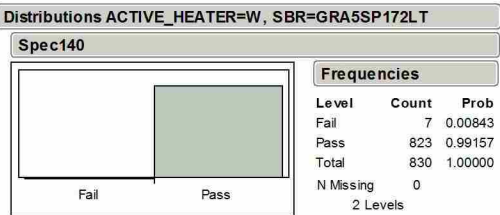
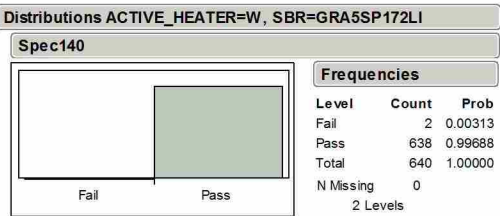
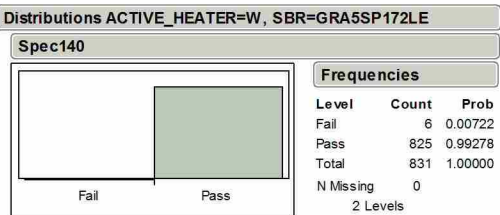
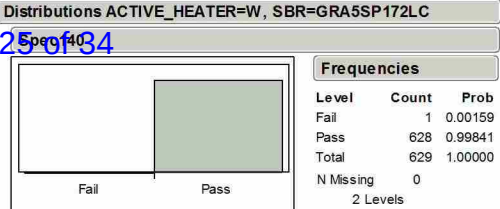
| SN | PFL# | Failing Head | Symptom | tftf (hrs) | HD_SN | Proposed Screening Location | Proposed Screen | Cum ET Yield Impact | ISI Yield Impact | Cut-In Date (Tentative) |
|----------|----------|--------------|------------------|------------|------------|-----------------------------|--|---------------------|------------------|-----------------------------|
| S1D0HH3Y | PFL-3305 | 1 | Head Instability | 53.7 | AL50BIF0V1 | ET | TP_PLUMP(-2min) + TCO_SLN (2.2 max) | 0.23% | | Expect STTH cut-in on Feb 7 |
| S1F04WRR | PFL-3299 | 5 | Head Instability | 62.6 | AL50MFHJL0 | ET | TP_NLUMP(20 max) | 0.07% | | Expect STTH cut-in on Feb 7 |
| W1D0C9W4 | PFL-3355 | 1 | Head Instability | 295.3 | AL509CQB1L | | | | | |
| W1D09BNP | PFL-2954 | 1 | Degraded Head | 297.2 | AL507PHKJ1 | ET | WIJITA(15 max)+SGRNH_F3(1700 max) | 0.08% | | Expect STTH cut-in on Feb 7 |
| W1D0CA1T | PFL-3388 | 1 | Degraded Head | 162.3 | AL50EF73X1 | ISI | SMAN_AMP_MAX > 1700 and SMANMAX_MAX_MAX > 2100 | | 0.39% | Expect PNG cut-in by Feb 9 |
| W1E04V4X | PFL-3125 | 1 | Degraded Head | 151.5 | AL50PNYTH1 | | | | | |
| Z1F0C5DK | PFL-3162 | 5 | Degraded Head | 411.8 | AL506GQ9J1 | | | | | |
| Z1F0CM95 | PFL-3094 | 2 | Degraded Head | 98.7 | AL50GA1IT1 | | | | | |
| Z1F0ELHT | PFL-3232 | 1 | Degraded BER | 56.0 | AL50I2ASZ1 | ET | TP_PLUMP(-2min) + CTQ_NORM_NSE(0.13max) | 0.38% | | Expect STTH cut-in on Feb 7 |

Summary Table and Analysis Courtesy of Song Liu, Hoay Young Tan, Wailnn Choon

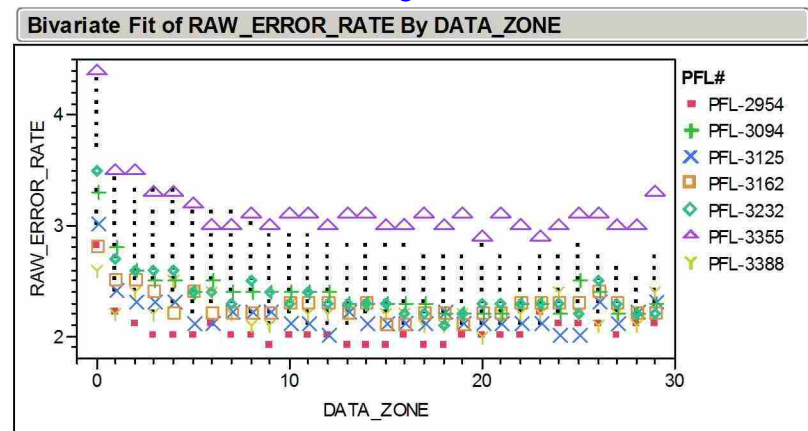
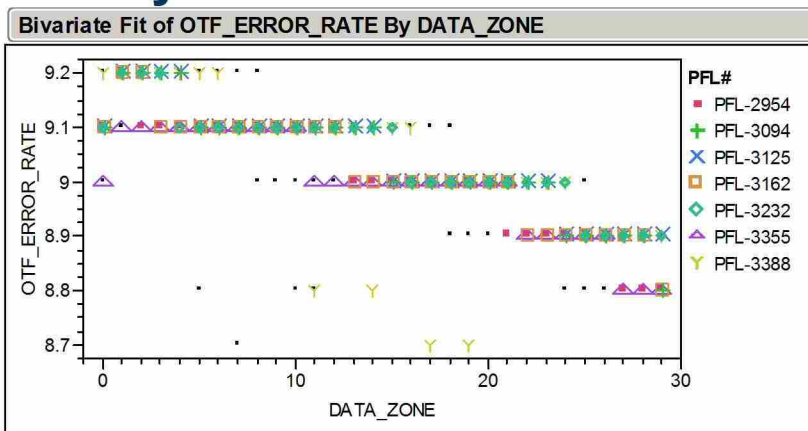
- 4/9 ORT failures have specs identified at ET that target traditional instability/noise metrics.
- Net ET Yield penalty projected to be ~ 1%.
- 1/9 ORT failures have a strong signature at ISI in slider. Head is a very significant outlier for SMAN noise metrics. Net ISI Yield penalty ~ 0.4%.
- RHO agrees to implement Slider ISI and HGA ET specs ASAP.
- New TSR request to be released by Feb 3. Expect cut-in in STTH by Feb 7.
- ISI Spec request by NRM team on Feb 6. PNG team expected to implement by Feb 9 (PNG off Feb 6-7).
- Other Degraded Head / Instability mitigation activities:
 - Heater at ISI testing: Positive Drive Results. Immediate implementation to 100% gated by H/W.
 - 20% implementation by FW31 end.
 - 70% implementation by FW35.
 - 100% implementation by FW37.
 - Continued Upstream Specs: PFLs-2907 and 3059 are being closed via upstream ET and ISI specs independently.
 - HMRB9.7B Reader Migration:
 - 11% of MBS worth of wafers will be converted to new reader starting FW32.
 - Potential for 25% wafer conversion in FW37 with lead pi-lot demonstration and RGA.
 - 100% wafer expected in FW42 (NRM and STST).
 - Drive will begin to see significant HMRB9.7B flow in FW1309.



- May be possible to utilize Baseline Jump spec to exclude PFL-3094.
- Max BLJ of 140 during Writer Heater Search can catch PFL-3094.
- Based on PCO17.2 RGAs, Yield Loss:
 - BtC: ~ 0.7 – 1%.
 - 3TB: ~ 1%.



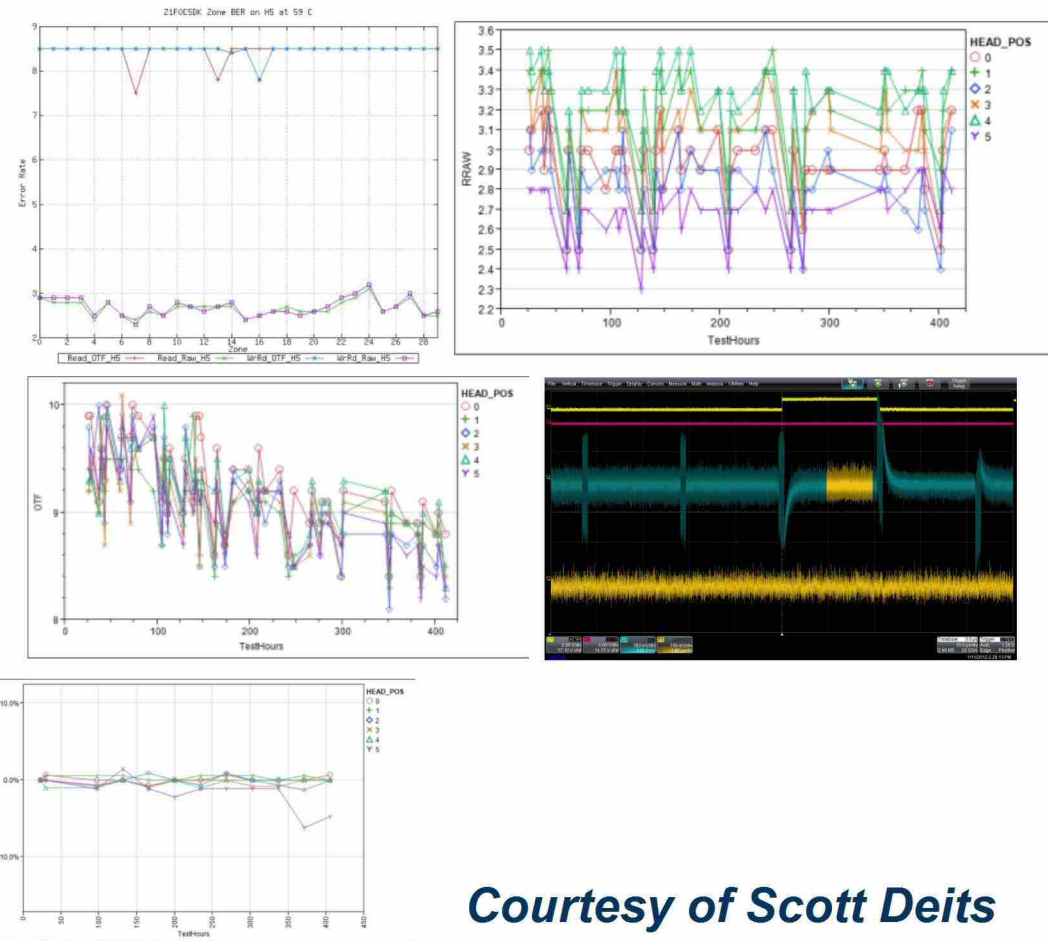
CERT Analysis of the Failures: Raw and OTF BER in Serial Format



- Potential exists to remove PFL-2954 (Min Raw of 1.9 dcd), PFL-3388 (Min Raw of 2.0 dcd), and PFL-3125 (Min Raw of 2.0 dcd).
- May decide to do this ONLY for OEM (not for Disty).

- Z1F0C5DK
- Test Bed: FW1219-FW1226-DT
- Time To Failure: 411.82 Hrs
- EC10436 .FFFFFFFF EUP-D 55C/40%
- - Drive has 0 BBM(s), 42 ALT(s) and 134 CE entries. (Majority on Hd5)

| | | | | | | | | | | |
|----------|---|----|-----|---|-----|-----|-------|-----|-----|-----|
| Z1F0C5DK | 0 | 16 | 287 | 2 | 289 | 277 | -0.54 | 143 | 147 | 4 |
| Z1F0C5DK | 0 | 29 | 287 | 2 | 245 | 238 | -0.29 | 139 | 135 | -4 |
| Z1F0C5DK | 1 | 0 | 325 | 2 | 277 | 239 | -1.74 | 115 | 112 | -3 |
| Z1F0C5DK | 1 | 16 | 325 | 2 | 280 | 266 | -0.62 | 117 | 125 | 8 |
| Z1F0C5DK | 1 | 29 | 325 | 2 | 284 | 264 | -0.90 | 127 | 136 | 9 |
| Z1F0C5DK | 2 | 0 | 321 | 1 | 275 | 237 | -1.78 | 140 | 134 | -6 |
| Z1F0C5DK | 2 | 16 | 321 | 1 | 213 | 199 | -0.63 | 136 | 128 | -8 |
| Z1F0C5DK | 2 | 29 | 321 | 2 | 262 | 249 | -0.57 | 129 | 123 | -6 |
| Z1F0C5DK | 3 | 0 | 256 | 2 | 336 | 248 | -4.13 | 152 | 172 | 20 |
| Z1F0C5DK | 3 | 16 | 256 | 1 | 273 | 236 | -1.74 | 152 | 161 | 9 |
| Z1F0C5DK | 3 | 29 | 256 | 1 | 259 | 236 | -1.07 | 159 | 160 | 1 |
| Z1F0C5DK | 4 | 0 | 310 | 2 | 307 | 242 | -3.04 | 151 | 150 | -1 |
| Z1F0C5DK | 4 | 16 | 310 | 1 | 281 | 265 | -0.74 | 142 | 137 | -5 |
| Z1F0C5DK | 4 | 29 | 310 | 1 | 272 | 239 | -1.53 | 135 | 123 | -12 |
| Z1F0C5DK | 5 | 0 | 265 | 2 | 285 | 378 | 4.38 | 109 | 147 | 38 |
| Z1F0C5DK | 5 | 16 | 265 | 2 | 283 | 407 | 5.83 | 121 | 153 | 32 |
| Z1F0C5DK | 5 | 29 | 265 | 1 | 224 | 335 | 5.25 | 122 | 147 | 25 |



| | | | | | | | | | |
|---------------------------------------|------|------|------|-----|-----|------|------|-------|--|
| ----- SYSTEM AREA READ-ONLY BER ----- | | | | | | | | | |
| | Rbit | Hard | Soft | OTF | BER | Wbit | Whrd | Wrtly | |
| Hd 0 | 9.4 | 9.4 | 9.4 | 9.4 | 7.8 | 0.0 | 0.0 | 0.0 | |
| Hd 1 | 9.4 | 9.4 | 9.4 | 9.4 | 6.1 | 0.0 | 0.0 | 0.0 | |
| Hd 2 | 9.4 | 9.4 | 9.4 | 9.4 | 7.2 | 0.0 | 0.0 | 0.0 | |
| Hd 3 | 9.4 | 9.4 | 9.4 | 9.4 | 5.8 | 0.0 | 0.0 | 0.0 | |
| Hd 4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.9 | 0.0 | 0.0 | 0.0 | |
| Hd 5 | 9.4 | 9.4 | 9.4 | 9.4 | 7.3 | 0.0 | 0.0 | 0.0 | |

| | | | | | | | | | |
|---|------|------|------|-----|-----|------|------|-------|--|
| -Z1F0C5DK SYSTEM AREA WRITE/READ BER diode temp = 61C - | | | | | | | | | |
| | Rbit | Hard | Soft | OTF | BER | Wbit | Whrd | Wrtly | |
| Hd 0 | 9.4 | 9.4 | 9.4 | 9.4 | 7.4 | 2.7 | 2.7 | 2.7 | |
| Hd 1 | 9.4 | 9.4 | 9.4 | 9.4 | 6.3 | 2.7 | 2.7 | 2.7 | |
| Hd 2 | 9.4 | 9.4 | 9.4 | 9.4 | 6.6 | 2.7 | 2.7 | 2.7 | |
| Hd 3 | 9.4 | 9.4 | 9.4 | 9.4 | 5.7 | 2.7 | 2.7 | 2.7 | |
| Hd 4 | 9.4 | 9.4 | 9.4 | 9.4 | 6.5 | 2.7 | 2.7 | 2.7 | |
| Hd 5 | 9.4 | 9.4 | 9.4 | 9.4 | 7.2 | 2.7 | 2.7 | 2.7 | |

- system track offset=0

- Adaptives Check shows very significant amplitude increase and significant Asymmetry change relative to CERT.
- System Area BER does not show anything significant.
- OTF BER in Reli testing shows steady for all heads including Hd5.
- ~6% Resistance drop for Hd5 in Reli at ~350hrs

Courtesy of Scott Deits

Seagate Confidential

Seagate Confidential

| LAST_OP | | STATUS | | LAST_MOVE | | | | FIRST_DATE | | | | | |
|-------------|----------------|-------------------|-----|---------------------|-----|-------|-----------|------------|----------|-----|-----|----|----|
| SHP-Shipped | | PASS | | 12/15/2011 17:11:05 | | | | 12/01/2011 | | | | | |
| PART_NUM | | DESCRIP | BG | SBG | FGR | | MODEL_NUM | | CUSTOMER | | | | |
| 9YN166-300 | | ? | MRW | GRA6S00066L | | ? | ? | | ? | | | | |
| PCBA | Loop | HSA | RWK | ED | FDR | CA | AH | F | AP | HP | HGP | MP | VO |
| 72171KW | | W218H0DKN | N | ED | FDR | CA | AH | F | AP | HP | HGP | MP | VO |
| 30 | 12/11/11 15:34 | TK1B09-A | | NTF | | 0407 | | NBR | | C A | | | |
| 29 | 12/11/11 15:34 | TK1B09-A | | NTF | | 0407 | | NB | | C A | | | |
| 28 | 12/11/11 07:32 | 1B06A21 | | CMT | | PASS | | NB | | C A | | | |
| 27 | 12/11/11 06:50 | TK410004 [154210] | | CUT2 | | PASS | | NB | | C A | | R | |
| 26 | 12/10/11 21:26 | TK410004 [154210] | | CUT2 | | START | | NB | | C A | | | |
| 25 | 12/10/11 21:24 | TK410004 [154210] | | FIN2 | | PASS | | NB | | C A | | R | |
| 24 | 12/10/11 19:13 | TK410004 [154210] | | FIN2 | | START | | NB | | C A | | | |
| 23 | 12/10/11 19:12 | TK410004 [154210] | | CRT2 | | PASS | | NB | | C A | | R | |
| 22 | 12/10/11 14:16 | TK410004 [154210] | | CRT2 | | START | | NB | | C A | | | |
| 21 | 12/10/11 14:10 | TK410004 [192700] | | FNC2 | | PASS | | NBR | | C A | | R | |
| 20 | 12/07/11 04:14 | TK410004 [192700] | | FNC2 | | START | | NBR | | C A | | | |
| 19 | 12/07/11 04:12 | TK410004 [192700] | | CAL2 | | PASS | | NBR | | C A | | R | |
| 18 | 12/06/11 15:57 | TK410004 [192700] | | CAL2 | | START | | NBR | | C A | | | |
| 17 | 12/06/11 15:55 | TK410004 [192700] | | PRE2 | | PASS | | NBR | | C A | | R | |
| 16 | 12/06/11 02:51 | TK410004 [192700] | | PRE2 | | START | | NBR | | C A | | | |
| 15 | 12/05/11 08:35 | 1B01B12 | | DBOUT | | PASS | | NB | | C A | | | |
| 14 | 12/05/11 08:33 | TK1B51 | | DBG | | PASS | | NB | | C A | | | |
| 13 | 12/05/11 07:21 | 1B04A81 | | AWDBG | | PASS | | NB | | C A | | | |
| 12 | 12/05/11 04:24 | TK410005 [11600] | | FNC2 | | 10504 | | NBP | | C A | | R | |
| 11 | 12/02/11 15:21 | TK410005 [11600] | | FNC2 | | START | | NBP | | C A | | | |
| 10 | 12/02/11 15:19 | TK410005 [11600] | | CAL2 | | PASS | | NBP | | C A | | R | |
| 9 | 12/02/11 03:52 | TK410005 [11600] | | CAL2 | | START | | NBP | | C A | | | |
| 8 | 12/02/11 03:50 | TK410005 [11600] | | PRE2 | | PASS | | NBP | | C A | | R | |
| 7 | 12/01/11 15:05 | TK410005 [11600] | | PRE2 | | START | | NBP | | C A | | | |
| 6 | 12/01/11 14:25 | 109BPS8 | | SCREW | | PASS | | NBP | | C A | | | |
| 5 | 12/01/11 14:25 | 1B09B13 | | PWA | | PASS | | NBP | | C A | | | |
| 4 | 12/01/11 14:19 | CRX109 | | CRX | | PASS | | NBP | | C A | | | |
| 3 | 12/01/11 14:19 | LRT109 [1] | | LRT | | PASS | | NBP | | C A | | | |
| 2 | 12/01/11 14:17 | ULD109 | | ULD | | PASS | | NBP | | C A | | | |
| 1 | 12/01/11 14:16 | RTP021 | | RTP | | PASS | | NBP | | C A | | | |

| | | | | | |
|----------------------------|------------|----------|---------|--------|--|
| Serial Number: | | Z1F0C5DK | | SUBMIT | |
| Site: | | Korat | | | |
| 5 | 5 | 21 | 17 | 25 | |
| 5 | 5 | 22 | 17 | 25 | |
| 5 | 5 | 23 | 17 | 25 | |
| 5 | 5 | 24 | 17 | 25 | |
| 5 | 5 | 25 | 29 | 25 | |
| 5 | 5 | 26 | 31 | 25 | |
| 5 | 5 | 27 | 17 | 25 | |
| 5 | 5 | 28 | 29 | 23 | |
| 5 | 5 | 29 | 31 | 26 | |
| 5 | 5 | 30 | 28 | 25 | |
| P255_FIR_LSI_DATA: | | | | | |
| HD_PHYS_PSN | HD_LGC_PSN | ZONE | TDTARGR | TM2R | |
| 5 | 5 | 0 | 11 | 155 | |
| 5 | 5 | 1 | 10 | 142 | |
| 5 | 5 | 2 | 9 | 141 | |
| 5 | 5 | 3 | 11 | 158 | |
| 5 | 5 | 4 | 10 | 144 | |
| 5 | 5 | 5 | 9 | 134 | |
| 5 | 5 | 6 | 10 | 142 | |
| 5 | 5 | 7 | 9 | 146 | |
| 5 | 5 | 8 | 7 | 125 | |
| 5 | 5 | 9 | 10 | 147 | |
| 5 | 5 | 10 | 11 | 154 | |
| 5 | 5 | 11 | 11 | 159 | |
| 5 | 5 | 12 | 11 | 161 | |
| 5 | 5 | 13 | 11 | 157 | |
| 5 | 5 | 14 | 11 | 158 | |
| 5 | 5 | 15 | 11 | 155 | |
| 5 | 5 | 16 | 9 | 142 | |
| 5 | 5 | 17 | 10 | 146 | |
| 5 | 5 | 18 | 9 | 136 | |
| 5 | 5 | 19 | 9 | 144 | |
| 5 | 5 | 20 | 10 | 156 | |
| 5 | 5 | 21 | 9 | 145 | |
| 5 | 5 | 22 | 11 | 156 | |
| 5 | 5 | 23 | 11 | 157 | |
| 5 | 5 | 24 | 11 | 156 | |
| 5 | 5 | 25 | 11 | 154 | |
| 5 | 5 | 26 | 10 | 145 | |
| 5 | 5 | 27 | 9 | 136 | |
| 5 | 5 | 28 | 10 | 149 | |
| 5 | 5 | 29 | 10 | 148 | |
| 5 | 5 | 30 | 8 | 125 | |
| P255_NPTARG_MISC_LSI_DATA: | | | | | |
| HD_PHYS_PSN | HD_LGC_PSN | ZONE | TARG_TO | TARG_T | |
| 5 | 5 | 0 | 6 | 14 | |
| 5 | 5 | 1 | 6 | 14 | |
| 5 | 5 | 2 | 6 | 14 | |
| 5 | 5 | 3 | 6 | 14 | |
| 5 | 5 | 4 | 8 | 14 | |
| 5 | 5 | 5 | 8 | 14 | |
| 5 | 5 | 6 | 8 | 14 | |

- PFL-3162 was rerun after it failed CERT in the first pass for EC10504 (Too many Servo Defects).
- The head implicated in this failure is Head 5 – the failing head in Reliability.
- From FIS, it appears nothing was changed, and the drive was simply re-CERT'ed.
- Appears that the ADG rule for this code (and possibly others should be reviewed).

P255_PRECOMP_VGA_LSI_DATA:

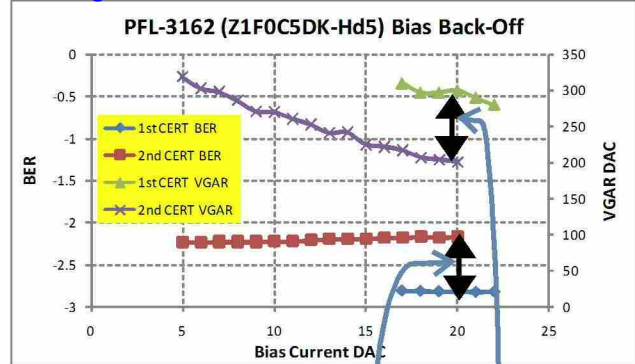
| HD_PHYS_PSN | HD_LGC_PSN | ZONE | LATE0R | LATE2R | LATE0F | LATE2F | ZFR | ZFAR | CTFRNGE | CTFR | ATT2R | VGARSH | VGA_TA_LPF | ATTC_RD |
|-------------|------------|------|--------|--------|--------|--------|-----|------|---------|------|-------|--------|------------|---------|
| 5 | 5 | 0 | 18 | 18 | 18 | 18 | 100 | 72 | 3 | 3970 | 1 | 317 | 1 | 2 |
| 5 | 5 | 4 | 16 | 16 | 16 | 16 | 107 | 71 | 3 | 3743 | 2 | 294 | 1 | 1 |
| 5 | 5 | 15 | 17 | 17 | 17 | 17 | 109 | 79 | 3 | 2957 | 2 | 271 | 1 | 1 |
| 5 | 5 | 25 | 17 | 17 | 17 | 17 | 100 | 70 | 2 | 2127 | 2 | 290 | 0 | 1 |
| 5 | 5 | 29 | 21 | 21 | 21 | 21 | 116 | 60 | 2 | 1653 | 1 | 298 | 0 | 2 |

P255_PRECOMP_VGA_LSI_DATA:

| HD_PHYS_PSN | HD_LGC_PSN | ZONE | LATE0R | LATE2R | LATE0F | LATE2F | ZFR | ZFAR | CTFRNGE | CTFR | ATT2R | VGARSH | VGA_TA_LPF | ATTC_RD |
|-------------|------------|------|--------|--------|--------|--------|-----|------|---------|------|-------|--------|------------|---------|
| 5 | 5 | 0 | 31 | 31 | 31 | 31 | 90 | 37 | 3 | 3594 | 1 | 216 | 1 | 3 |
| 5 | 5 | 4 | 28 | 28 | 28 | 28 | 102 | 42 | 3 | 3385 | 2 | 308 | 1 | 3 |
| 5 | 5 | 15 | 30 | 30 | 30 | 30 | 120 | 35 | 3 | 2807 | 2 | 303 | 1 | 3 |
| 5 | 5 | 25 | 30 | 29 | 30 | 29 | 125 | 50 | 2 | 1833 | 2 | 292 | 0 | 3 |
| 5 | 5 | 29 | 31 | 30 | 31 | 30 | 87 | 78 | 2 | 1377 | 1 | 274 | 0 | 3 |

P064_SRVO_FLAW_HD:

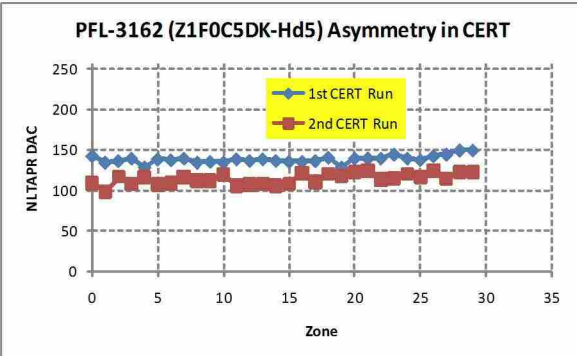
| HD_PHYS_PSN | HD_LGC_PSN | RAW_SRVO_FLAW_CNT | SKIP_TRACKS | REFINED_SRVO_FLAW_CNT | HD_STATUS |
|-------------|------------|-------------------|-------------|-----------------------|-----------|
| 0 | 0 | 0 | 8 | 0 | 1 |
| 1 | 1 | 0 | 2 | 0 | 1 |
| 2 | 2 | 0 | 2 | 0 | 1 |
| 3 | 3 | 0 | 9 | 0 | 1 |
| 4 | 4 | 0 | 6 | 0 | 1 |
| 5 | 5 | 140 | 10005 | 140 | 1 |



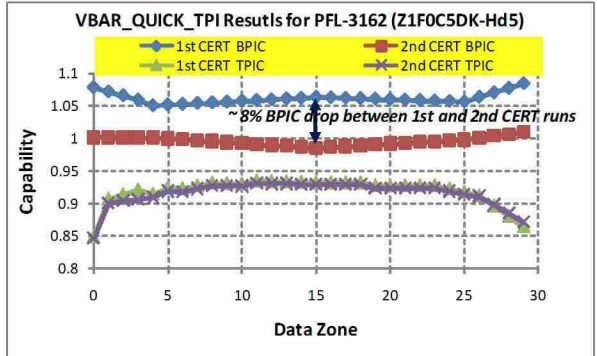
BER drop between 1st and 2nd CERT runs ~ 0.7 dcd.

VGAR drop between 1st and 2nd CERT runs ~ 80 DAC.

- Drive has significant loss in margin between 1st and 2nd CERT runs.
- In first CERT run, drive failed in FNC2 for EC10504 (too many servo defects).
- The drive was subsequently re-CERT'ed without rework.
- Clear indications of reader degradation between 1st and 2nd CERT runs.
- Increased Amplitude, Asymmetry change, and BER degradation (like bench FA) noted between 1st and 2nd CERT runs.
- Drive adaptation in 2nd CERT run very different from the 1st run and this is the reason the drive passed CERT.
- Very high likelihood that the head degraded during the 1st CERT run and continued to degrade during Reliability



Significant Reader Asymmetry change between 1st and 2nd CERT runs.



BPIC drop of ~ 8% between 1st and 2nd CERT runs.

• Corrective Action for this will need to include possibly modifying the ADG rules for this failure to include a mandatory head (and possibly

| SN | PFL# | Failing Head | Symptom | ttf (hrs) | HD_SN | Proposed Screening Location | Proposed Screen(s) | Yield Impact at Location | Cut-In Date (Tentative) |
|----------|----------|--------------|------------------|-----------|------------|-----------------------------|--|--------------------------|-----------------------------|
| S1D0HH3Y | PFL-3305 | 1 | Head Instability | 53.7 | AL50BIFOV1 | ET | TP_PLUMP(-2min) + TCO_SLN (2.2 max) | 0.23% | Expect STTH cut-in on Feb 7 |
| S1F04WRR | PFL-3299 | 5 | Head Instability | 62.6 | AL50MFHJL0 | ET | TP_NLUMP(20 max) | 0.07% | Expect STTH cut-in on Feb 7 |
| W1D0C9W4 | PFL-3355 | 1 | Head Instability | 295.3 | AL509CQBI1 | | | | |
| W1D09BNP | PFL-2954 | 1 | Degraded Head | 297.2 | AL507PHKJ1 | ET | WIJITA(15 max)+SGRNH_F3(1700 max) | 0.08% | Expect STTH cut-in on Feb 7 |
| W1D0CA1T | PFL-3388 | 1 | Degraded Head | 162.3 | AL50EF73X1 | ISI | SMAN_AMP_MAX > 1700 and SMANMAX_MAX_MAX > 2100 | 0.39% | Expect PNG cut-in by Feb 9 |
| W1E04V4X | PFL-3125 | 1 | Degraded Head | 151.5 | AL50PNYTH1 | | | | |
| Z1F0C5DK | PFL-3162 | 5 | Degraded Head | 411.8 | AL506GQ9J1 | Drive ADG | Possibly prevent reCERT for EC10504 along with other potential ECs | None | TBD |
| Z1F0CM9S | PFL-3094 | 2 | Degraded Head | 98.7 | AL50GA1IT1 | Drive CERT | MAX_JUMP>140 in P135_AGC_BASELINE_JUMP for ACTIVE_HEATER=W | ~ 1% | TBD |
| Z1F0ELHT | PFL-3232 | 1 | Degraded BER | 56.0 | AL50I2ASZ1 | ET | TP_PLUMP(-2min) + CTQ_NORM_NSE(0.13max) | 0.38% | Expect STTH cut-in on Feb 7 |

- Coverage so far exists on 7 out of 9 failures – includes ISI, HGA ET, Drive specs, and Drive ADG rule changes.
- 3 of the failures can also be screened with a Raw BER spec in P_FORMAT_ZONE_ERROR_RATE (Fail if < 2.1).
 - Yield impact under assessment.
 - 2 of these overlap with ISI and ET spec (PFL-2954, PFL-3388).
 - PFL-3125 can additionally be caught with Raw BER spec that has no coverage elsewhere.
 - Decision will be made on Raw BER spec after CERT process is reviewed and ADG rules checked for these.
 - Potential exists for coverage of 8/9 failures.

GIO Slot Analysis

LCO process team identified five Bacall drives failed in Wuxi for EC13069(DST long failure) which also involved movement of neighboring slot during GIO

Data is limited to only five drives due to short retention of factory process data

Some slots experienced multiple neighboring tray gantry movements

| Operation of failing HDD while neighboring slot tray is moved | No Movement | ATI Test @ OD | Sequential Write | Sequential Read |
|---|-------------|---------------|------------------|-----------------|
| Number of events | 3 | 3 | 1 | 1 |

- Correlation of the failures to Gemini slot interaction is not possible on the first batch as the failures bypassed FA.
- The drives were reworked and reprocessed.
- This process is a deviation from normal ODT process.
- Currently, first time LODT failures are reworked and/or processed without FA.
- Only the second LODT failure are routed to FA.
- Proper FA is essential in correlating the stressor to NMD's.

Important Note

Both ATI Test and Sequential Write are considered high write duty cycle tests.
Dither and DOS activities can be invoked frequently during these operations

NMD Code improvements (Core team input)

Activity 1 - PCO17.3A (New MQM):

Feb 4 - Factory scheduled to start L-ODT demo build

Feb 8 - Finish L-ODT & publish results. If results look good, then:

Feb 9 - Mass pro cut in.

Activity 2 - JIT3 F3 code:

Feb 6 - Start SIE & Reli testing

Feb 9 - Finish SIE & Reli testing

Feb 10 - Mass pro cut in.

Activity 3 - New Servo code:

Feb 6 : Start Reli & SIE with code that looks best by Monday, followed by 1 week to run, find issues, fix issues etc.

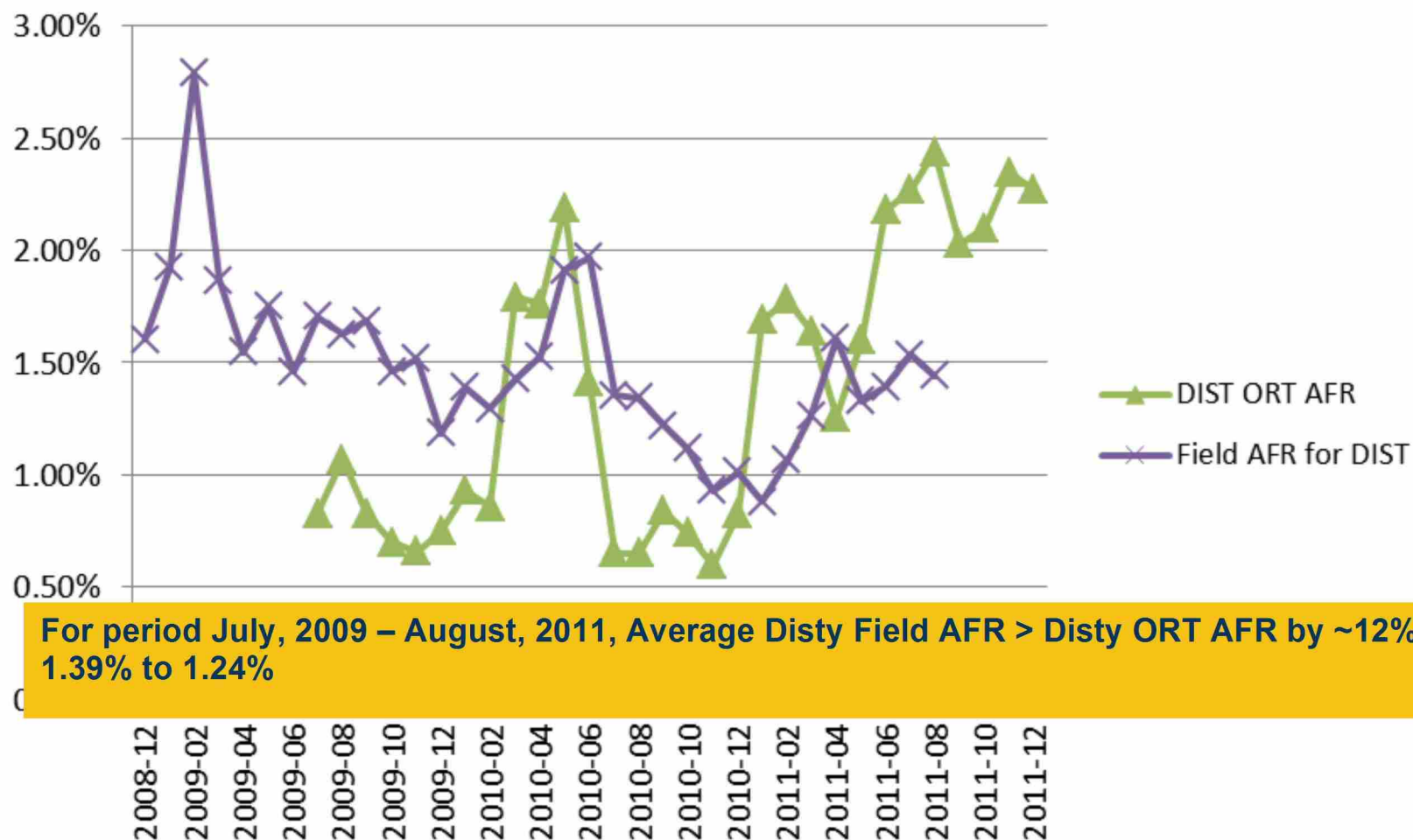
Feb 10 : we will have bench verification of either code - by Dave O LDV work & Bench signal analysis (Servo team / Abhay)

Feb 13 : Finish Reli & SIE successfully.

Feb 14 : Push to implement in masspro.

Pharaoh ORT Dist AFR to Field AFR

Pharaoh ORT DISTI AFR vs Field DISTI AFR



Seagate Confidential

Seagate Confidential

WW32 1TB OEM Shipments

| | | |
|------------|--------------|--------|
| 9YN162-500 | ACER | 5,000 |
| | BUFFALO | 4,000 |
| | DISTRIBUTION | |
| | LACIE | 4,000 |
| | MEDION | 11,000 |
| | TOSHIBA | 5,000 |
| 9YN162-541 | LENOVO | 23,000 |

TBD pending
usage
verification

External Box
Builders @ 100k
MTBF
FGI Ship as Is.
New Build w/ 17.3A

Lenovo has no
Pharaoh 1TB
volume
Max Prime + 17.3A
Process

Many OEMs (including Acer) are buying from
channel today.

Seagate Confidential
Seagate Confidential